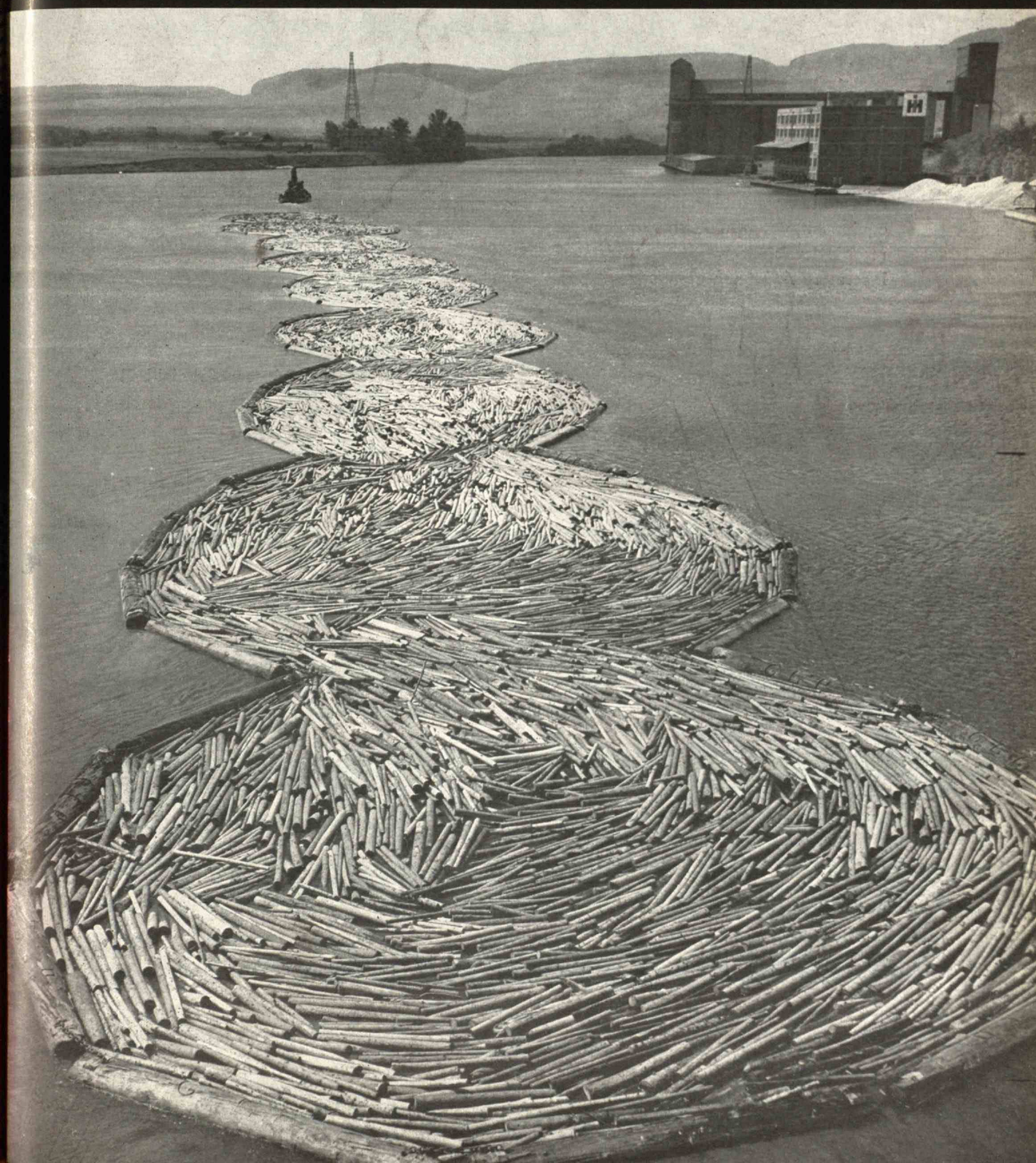


TECHNOLOGY

REVIEW *June* 1953



technology review

Published by MIT

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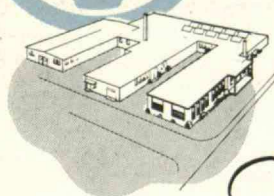
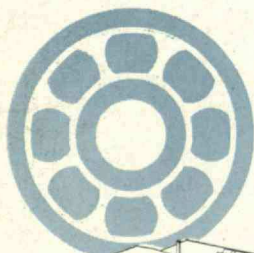
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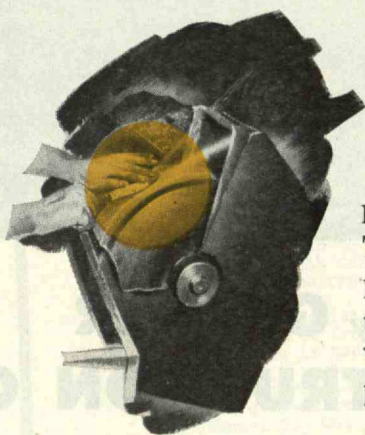
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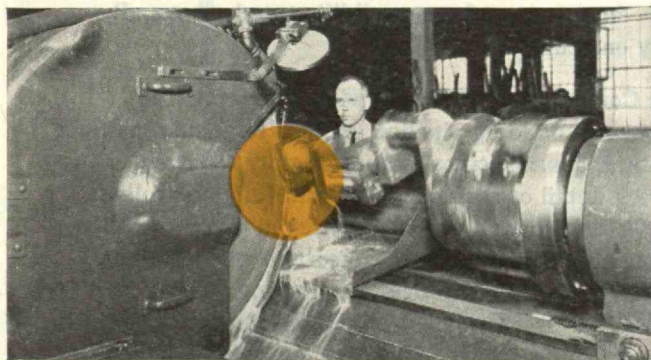


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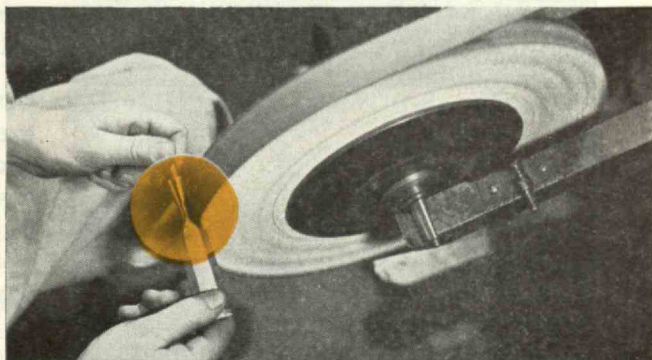
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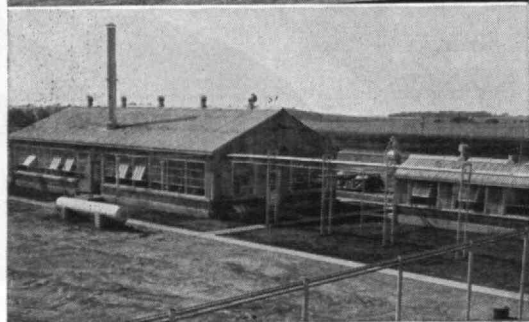
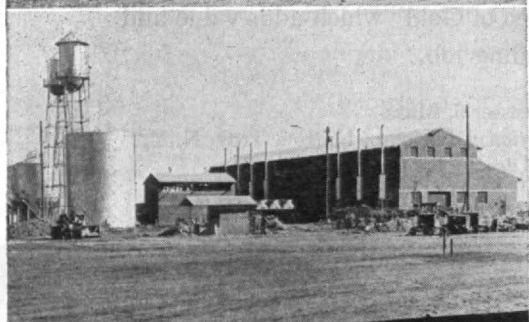
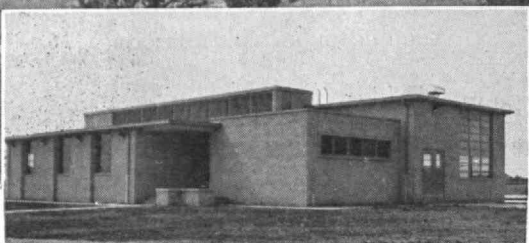
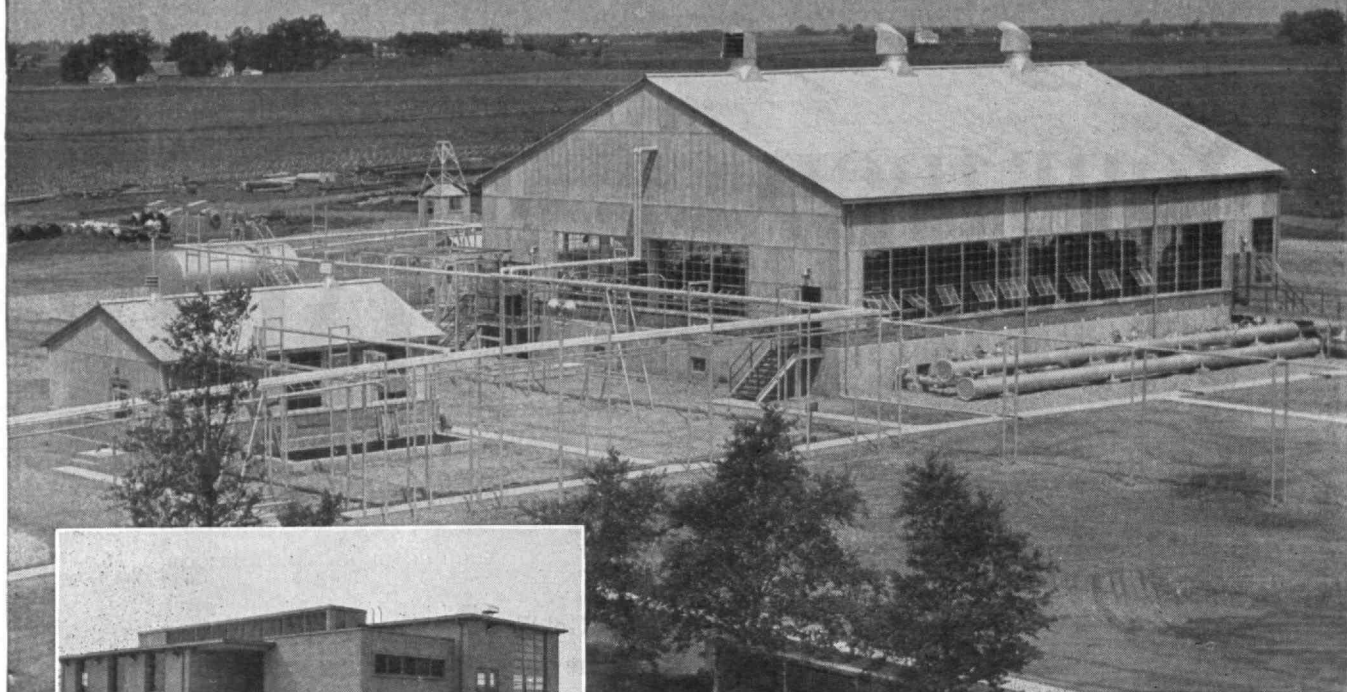


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TELEVISION
CHANNEL 5

March 4, 1953

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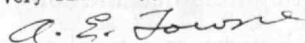
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Very sincerely,



A. E. Towme
Director of Engineering
KPIX, KSFO, KWID

AET/bh

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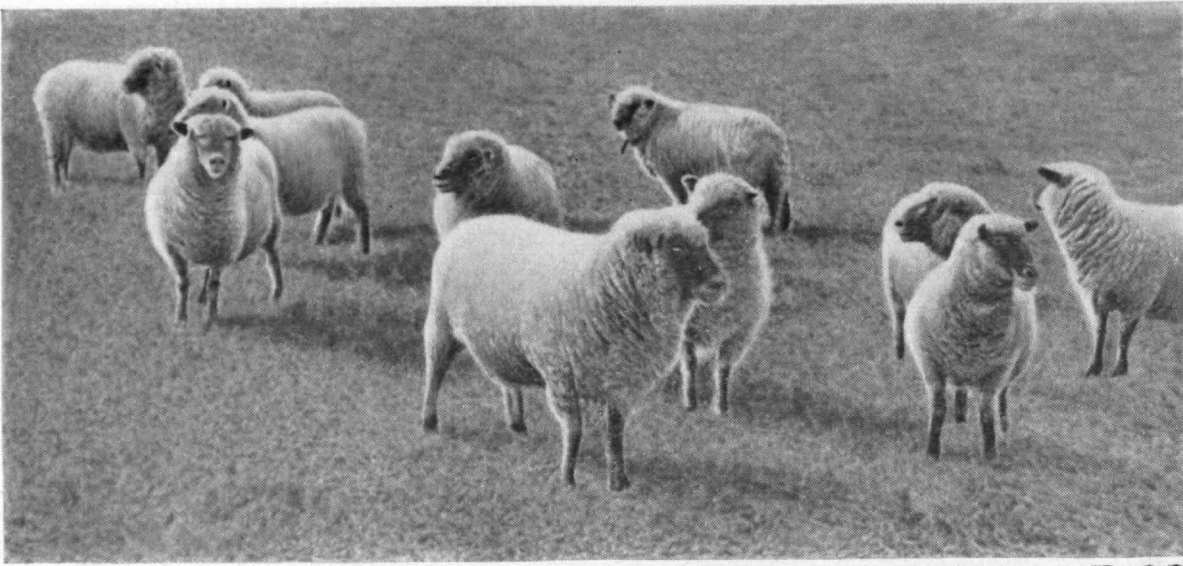
• The properties of this cable can help reduce your operating costs.
Our engineering, production and application experiences are at your service.



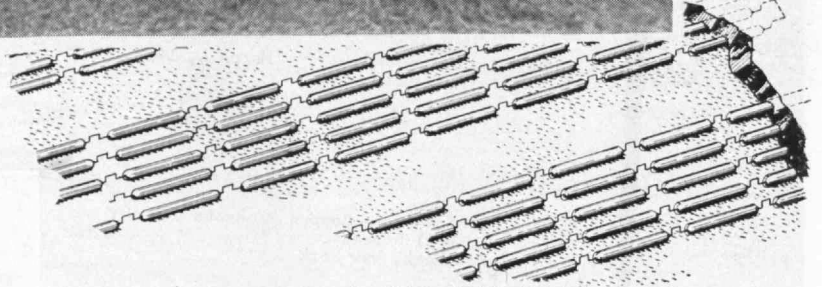
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Perkins and Will, nationally known Architects and Engineers, specify "perimeter" heating for comfort and economy

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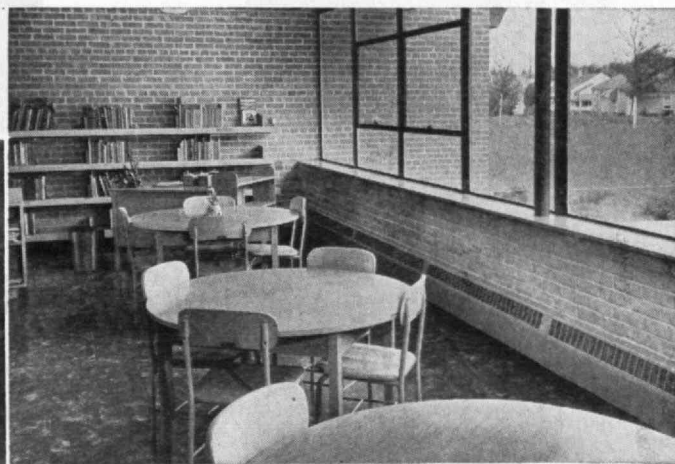
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Left below: Teacher's lounge in Technical Building, Evanston Township High School, Evanston, Illinois. The exposed walls are heated with Webster Walvector painted to match wall color. Photo by Hedrich-Blessing.

Right: Library in Cascades Elementary School, Jackson, Michigan. Auditorium and gymnasium, in separate wings, are available for community use without opening the school proper.



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THE TABULAR VIEW

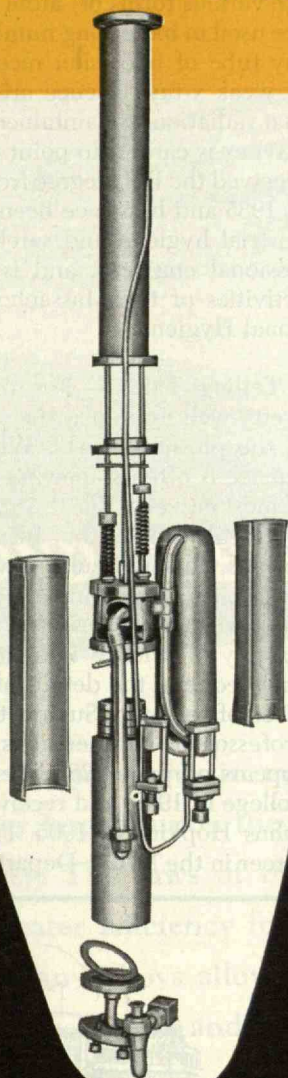
Industrial Management. — As its first full year of operation draws to a close, E. P. Brooks, '17, Dean of the School of Industrial Management, reviews the hopes, objectives, and accomplishments of the Institute's newest school (page 419). In establishing the School of Industrial Management, Dean Brooks and his associates have aimed to develop future leaders of industry who have a good basic background in science and engineering. Dean Brooks is a graduate of the Institute's Course in Business and Engineering Administration which now forms part of the new School. He has had a distinguished career in business, holding executive positions with American Cotton Oil Company, Montgomery Ward and Company, United States Steel Corporation, and serving Sears Roebuck and Company for a quarter of a century. From 1938 to 1951 he was vice-president in charge of factories, and from 1941 to 1952 was a director of the Chicago mail order firm. From 1949 to 1951, Dean Brooks was chairman of the Committee on Equipment and Materials, National Research and Development Board, and in 1945 was vice-deputy in charge of the American Mission to China for the War Production Board.

Nuisance Electricity. — In the May issue of The Review an article on the "History of Static Electricity" by SIDNEY M. EDELSTEIN, '32, developed the principal points of progress in early electrical science. Mr. Edelstein concludes his two-part article with a discussion of the role of static electricity in the textile industry, and methods which are being used to combat its annoying characteristics (page 425). That there are problems worthy of any engineer's attention will become evident by Mr. Edelstein's recital of devices which have been used in the past to eliminate static. Mr. Edelstein is technical director of the Dexter Chemical Corporation. He has an extensive personal collection of great works, documents, and letters in the history of science, which has been put to good use in the past few years, in his position as secretary for the Division of History of Chemistry of the American Chemical Society.

Mechanical Resurgence. — The resurgence now taking place in nearly all branches of mechanical engineering is reflected in undergraduate training in this profession. In this issue (page 429) C. RICHARD SODERBERG, '20, Professor of Mechanical Engineering, emphasizes the ways in which an extended program of graduate study, intensive research on problems of real value, and close contact with leaders in industry all act to benefit the undergraduate curriculum in Mechanical Engineering at the Institute. Professor Soderberg was graduated from Sweden's Chalmers Institute of Technology in 1919, and received the honorary degree of doctor of technology from that institution in 1951. He also received the B.S. degree from M.I.T. in 1920. After nearly two decades of engineering work in industry, Professor Soderberg returned to the Institute in 1938 as a member of the Department of Mechanical Engineering. He became head of that Department in 1947.

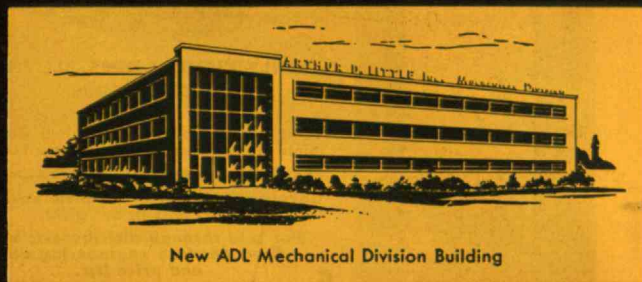
(Concluded on page 410)

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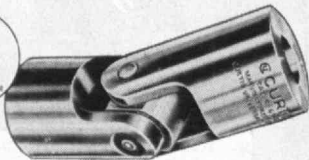
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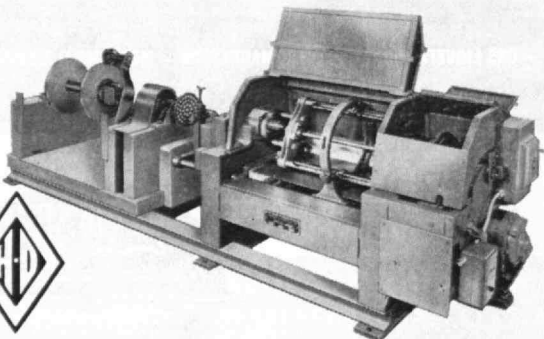
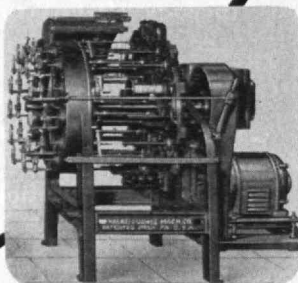
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THE TABULAR VIEW

(Concluded from page 408)

Irritating Ionization. - Throughout life, we are all subject to a certain amount of naturally occurring ionizing radiation. Studies which have been made to date indicate that human beings can tolerate, safely, radiation many times that which is encountered naturally. But the sources of radiation-producing mechanisms are ever increasing; radioactive materials are a common commodity in research laboratories, as are various forms of "atom smashers." X-ray machines are used in increasing numbers, and even the cathode-ray tube of television receivers is a potential source of weak x-rays. Hence arises the need to make sure that radiation is maintained at a safe level, as HAROLD BAVLEY is careful to point out (page 433). Mr. Bavley received the B.S. degree from Northeastern University in 1935 and has since been working in the field of industrial hygiene and safety. He is a registered professional engineer, and is in charge of engineering activities of the Massachusetts Division of Occupational Hygiene.

Telling Tales. - For the most part, science has pretty well examined the simple and obvious matters of the physical world. What remains to be done in science is often somewhat remote from the daily life of most citizens. For this reason, modern writers have a difficult task cut out for them when they deal with science, and particularly when they attempt to interpret science in terms of the layman's language. For such writers as these, an understanding of the philosophy of science is of much greater value than a knowledge of the details of the results of a particular piece of research. Such is the view of H. B. PHILLIPS, Professor of Mathematics, Emeritus, whose article appears on page 428. After graduation from Erskine College in 1900, and receiving the Ph.D. degree from Johns Hopkins in 1905, Professor Phillips spent his career in the M.I.T. Department of Mathematics.



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FIFTH project since 1948 for
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BEYOND THE HORIZON....

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If you had been driving the car on the left (and if that screen had been live people), somebody would have been hurt. But the car on the right was equipped with Double Eagles, with the high-traction Resist-a-skid Tread. It stopped in time.

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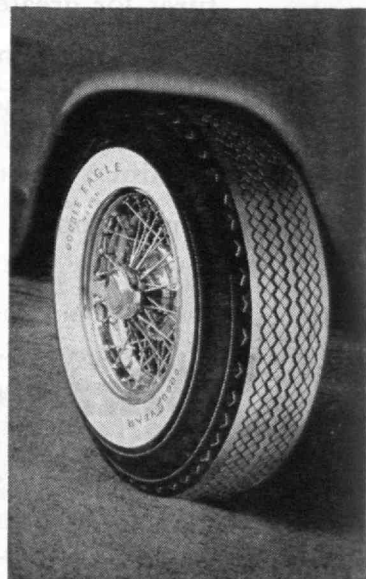
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We call this tire the Plus-10 Double Eagle because it is superior in 10 important ways. But with all these advancements, it costs only about 5% more than premium tires made of rayon.

See this tire at your Goodyear dealer's now. Goodyear, Akron 16, Ohio.



Double Eagle, T. M. —The Goodyear Tire & Rubber Company, Akron 16, Ohio



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"The things that the flag stands for were created by the experiences of a great people. Everything that it stands for was written by their lives. The flag is the embodiment, not of sentiment, but of history."

—Woodrow Wilson
(Address of June 14, 1915)

THE TECHNOLOGY REVIEW

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EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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To Technology Alumni

I wish to report to you on the recent testimony of Professors Martin, Amdur, and Levinson, who were subpoenaed to appear before the House Un-American Activities Committee. Let me first quote in full the statement issued by Dr. Compton and myself on April 28:

"The Executive Committee* of the M.I.T. Corporation decided today that Professors Martin, Amdur, and Levinson, who testified freely and co-operatively before the House Un-American Activities Committee, will be continued at the Institute without change of status and in good standing.

"The Executive Committee has examined the present position and recent conduct of the three professors in the light of its long-standing policy with respect to the conduct and responsibility of its Faculty members. The Institute is unequivocally opposed to Communism. It is opposed to regimentation or control which dictates to scholars the opinions they must have and the doctrines they must teach. It believes that the teacher must be diligent and loyal in citizenship and that he must teach in the clear daylight without hidden allegiance or obligations which require him to distort his research or teaching in accord with dictates from without.

"While we in no sense condone the earlier associations with Communism of the three professors, nor would we tolerate the presence of a known Communist on our Faculty, we are convinced that since the true nature of Communism became apparent to them some years ago, they have been free of any sympathy for it and have dissociated themselves completely from it. They have spoken with candor about their past activities, and we are convinced that they are teachers of integrity and loyalty.

"Because of our confidence in them, as well as the candid manner in which they have reported on their past associations, we find no cause to change their status at the Institute.

"This decision of the Executive Committee was reached after a thorough review of the records of the three men and after hearing the report of a Faculty committee which examined the cases."

A copy of the recorded testimony of the three professors may be obtained by those who wish it by writing to the Publications Office at the Institute. Each of the three professors was complimented and thanked by the committee, and to one of them Congressman Clardy said:

"I want to thank you because I think you have done something worth while. I think, speaking for the committee, that we feel you have performed a worth-while service to your government and to this Congress and I trust, sir, that there will be no sanctions imposed upon you because, in my opinion, you do not deserve it. Or, if you find yourself in any trouble or difficulty as the result of your appearance here today, I hope you will communicate with this committee so that we can be of assistance to you."

The name of M.I.T. was also involved in the testimony of Dr. Philip Morrison, Professor of Physics at Cornell. During a sabbatical leave from his institution, Dr. Morrison came to M.I.T. as a Visiting Professor for four months. He is no longer at the Institute. Since he is a staff member of another institution, M.I.T. considered that it had no jurisdiction and that it would be inappropriate for it to comment or act upon his testimony beyond pointing out that it had no knowledge until after he had been subpoenaed that he had been involved in any way in Communism.

*The membership of the Executive Committee is as follows: Messrs. R. H. Blanchard, T. D. Cabot, D. F. Carpenter, K. T. Compton, M. B. Dalton, J. R. Killian, Jr., J. R. Macomber, Redfield Proctor, and J. J. Snyder.

The current investigations of teachers have been met in various ways by American institutions. While it would of course have been better if M.I.T. had not been involved at all, I think that we have nevertheless met the investigations with candor, courage, unity, and patriotism. We have met the issues in the M.I.T. manner. As president of M.I.T., I signed the statement of the Association of American Universities which has received wide approval. Our Faculty, through its committee on responsibilities of faculty members, in representing the faculty point of view, has assumed along with the Executive Committee responsibility for the best interests of the Institute and for the public welfare.

This unity of action is vital because of the nature of a university (which is set forth effectively in the AAU statement). A university is not a "line" organization. "For many reasons," says the report of the AAU, "it must differ from a corporation created for the purpose of producing a salable article for profit. Its internal structure, procedures, and discipline are properly quite different from those of business organizations. It is not so closely integrated and there is no such hierarchy of authority as is appropriate to a business concern; the permanent members of a university are essentially equals."

During the entire period since the close of War War II we have been especially alert for signs of attempted indoctrination of students at the Institute by Communist sympathizers. We have found no evidence of such indoctrination. We have ample evidence that students at M.I.T. are not susceptible to such indoctrination.

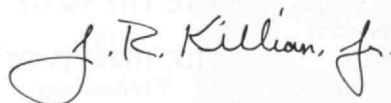
We had no grounds for specific action against any faculty member until the disclosures of Herbert Philbrick in 1950, which resulted in the indictment of Professor Struik. We immediately relieved Struik of all Institute duties and placed him on leave pending trial. We had, of course, expected that this case would have been decided in the courts long since. The governing bodies of the Institute are re-examining the case of Professor Struik in the light of the testimony recently presented in Washington.

At the time of the Struik indictment I issued on behalf of the Institute a statement regarding the actions that would be taken in the event that a faculty member was demonstrated to have acted in bad faith or in a dishonest or illegal manner. This statement, which was distributed to Alumni, still stands as a definitive statement of Institute policy. We have consistently been governed by this policy.

The safeguarding of secret information involved in governmental research activities at the Institute has also, of course, been one of our primary concerns. Here we have exercised every precaution, and no evidence has been found of any breach of security.

With these facts before us, I can say to you without reservation that M.I.T. continues to stand firm as a co-operative, unified community of scholars of the highest integrity and loyalty. It continues with pride and diligence to serve our nation and our way of life.

Yours sincerely,



President

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The Trend of Affairs

Defy the Tooth of Time

IN one respect mankind may well envy the rodents, whose front teeth grow continuously throughout life and thus replace wear at the grinding surface. The human being is endowed with but two sets of teeth in the course of his lifetime; and the second of these sets is apt to be quite battered, often gone entirely, before life ends. Human tooth decay—dental caries—has long been the target of intensive research. Some practical advances have been made. In particular it is now known that the regular ingestion during early life of small quantities of the element fluorine, in the form of innocuous salts, will reduce the incidence of dental caries later on. To implement the knowledge, some 150 American communities are now adding small amounts of fluorides to their water supplies—usually about one part fluorides per million parts of water.

But the effectiveness of measures such as fluoridation of drinking water, and the results of long-range dental caries research, all lie in the future. For the present the human chewing apparatus must be patched as fast as it decays. Various materials are used for such patching—the filling of tooth cavities. When the cavity is large, and especially if the grinding surface is extensively involved, an excellent (but expensive) filling is a precision-cast gold inlay. But the majority of fillings are done with substances that can be made up in paste form, that harden after they have been packed into the cavity. Materials of this sort include cements, porcelains, plastics, and amalgams. The latter, popularly called “silver fillings” are very widely used. Their dark color limits them to teeth that usually are not visible; but they have advantages of relative ease of installation, low cost, and durability. A prime virtue of amalgam fillings has been considered to be that, when properly prepared, they expand slightly on hardening, and thus effect a firm bond with the tooth.

The amalgam commonly used by dentists is made just before use, by grinding with a porcelain mortar and pestle five parts of a powdered alloy of silver, tin, copper, and zinc with seven or eight parts of mercury. Excess mercury is next removed by squeezing the plastic mixture between the fingers. The amalgam is then quickly packed into the prepared cavity, the surface is modeled, and the completed filling hardens.

One shortcoming of the amalgam filling has been the critical nature of the packing operation. Degrees of pressure and uniformity of pressure applied during this procedure strongly influence the degree of expansion on hardening and the final strength of the filling. Modern dentists are artists as well as scientists; but the operation of packing amalgam makes heavy demands upon their manual skill.

In an attempt to provide more uniform packing of amalgam fillings, several automatic tamping devices have been developed. Some of these work pneumatically on a compressed air supply; others are mechanical and are contrived to attach to the dentist's regular flexible shaft drilling equipment. The National Bureau of Standards of the United States Department of Commerce recently completed objective tests of amalgam fillings packed with several of the commercially available automatic tampers. Tests of the fillings included measurements of dimensional change on hardening and of compressive strength, and metallographic and chemical analyses. All results were compared with those made on hand-packed amalgams.

The automatically packed amalgams were found not to differ in composition from those packed by hand. The automatically packed fillings appeared to have two advantages: slightly more rapid gain in compressive strength during hardening, and a little greater final strength. They had one possible shortcoming, however; very little expansion or even slight contraction on hardening. Whether this is a practical disadvantage can only be known from actual trials in the mouths of patients.

Acid Polemics

ONE who has followed newspaper headlines for the past several weeks could easily gain the impression that M.I.T. and the Bureau of Standards have some violent differences of opinion on additive fluids for use in lead-acid storage batteries. If such erroneous impressions have gained ground, they may be attributed to incomplete accounts of political house cleaning in the new administration in which Secretary of Commerce, Sinclair Weeks, asked for the removal of Allen V. Astin, Head of the National Bureau of Standards. Secretary Weeks's action was taken, in part, as the result of the Bureau's investigation of battery additives. Since the Institute's name has figured in this transaction, as an innocent bystander, it may be well to survey the significant points in this program.

During its half century of distinguished service to the nation, the Bureau of Standards has made a careful study of lead acid storage battery behavior and has publicly reported on the effect of material to be added to battery acid to improve performance. When Pioneers, Inc., a West Coast manufacturer began the sale of a battery additive, which it called AD-X2, the Bureau of Standards was asked to evaluate the effects of AD-X2. On the basis of its past studies and the fact that AD-X2 was similar in composition to other additives it had examined, the Bureau of Standards was reluctant to undertake this task. At the request of the Senate's Select Committee on Small Business, the Bureau of Standards did make tests on AD-X2. On the basis of these tests, Pioneers, Inc. was prevented by the Post Office Department from using the mails to sell its product.

In August, 1952, the Select Committee on Small Business requested the Institute to undertake independent tests on the effectiveness of AD-X2. Because such tests would clearly represent routine commercial testing and would not contribute to science, M.I.T. officials were unwilling to undertake this task. The Institute finally agreed to make the required tests, as a public service, at the specific request of the Select Committee on Small Business.

In October, 1952, after the tests had already been initiated, the Institute was advised that no funds were available for paying the costs of materials and man power involved in making the test. The Select Committee on Small Business therefore requested M.I.T. to bear the burden of expenses as a public service. This the Institute agreed to do. Tests were conducted by Harold C. Weber, '18, Professor of Chemical Engineering. In view of the controversial nature of such tests, James A. Beattie, '17, Professor of Physical Chemistry, was asked to observe the experiments and independently verify the facts established, which he did. The results of Dr. Weber's study were also analyzed statistically by George P. Wadsworth, '30, Associate Professor of Mathematics, and Joseph G. Bryan, '38, of the Division of Industrial Cooperation. The studies were completed on December 1, and two copies of the report were transmitted to Blake O'Connor, staff member of the Senate's Select Committee on Small Business, on December 16.

In sending two copies of the report to Mr. O'Connor, the letter of transmittal, written by Julius A.

Stratton, '23, Provost and Vice-president of M.I.T., included the following comments:

"I would point out further that there are no recommendations included in this report, nor did our group arrive at any definitive conclusions with respect to the commercial value of the product. The report sets forth the results of very careful laboratory tests, and these results have been corroborated and analyzed statistically."

The report itself stated: "Usually an evaluation of how a product will act under field conditions can be obtained only after extensive laboratory experimentation. Even after such experimentation, it is common practice in engineering work to subject products to field tests. How a given innovation will perform under use conditions is the true test of its worth. For this reason, laboratory findings must be supplemented by field use data if a true evaluation is to be obtained."

In spite of these statements, the M.I.T. report was interpreted as being in conflict with the Bureau of Standards report which did not endorse AD-X2.

When it was announced on April 17 that the functions of the Bureau of Standards were to be reviewed by a distinguished group of scientists representing the National Academy of Sciences and that Dr. Astin would be reinstated, James R. Killian, Jr., '26, President of M.I.T., issued the following statement:

I have just learned of the announcement by Secretary Weeks with respect to the Bureau of Standards and Dr. Astin. Professor Weber, who made the M.I.T. test, and I are delighted by the action taken and believe it particularly appropriate that a committee is to be appointed by the National Academy of Sciences to review the facts in regard to the Battery Additive AD-X2.

Because of the widespread misunderstanding of the significance of the tests conducted by M.I.T., I wish to outline the conditions under which M.I.T. undertook the tests and the implications of the report it presented.

In August, 1952, Professor Harold Weber, a highly competent and experienced professor of engineering at M.I.T., was asked by the Senate Committee on Small Business to advise it in connection with its study of the battery additive AD-X2. Professor Weber agreed to assist, acting with the full knowledge and approval of the Institute.

Last October, the Senate Select Committee on Small Business requested M.I.T. to provide Professor Weber with the facilities to make laboratory tests on the battery additive. It was explained that the committee did not have funds to go to a commercial laboratory. While M.I.T. ordinarily does not carry on such tests, the Institute felt in the public interest it should make its facilities available to the committee. Its purpose in making the tests was not to render a verdict on the product but only to provide additional facts to the government. It would have been inappropriate under the circumstances for M.I.T. to make a decision in regard to the commercial value of the product.

In conducting these tests, Professor Weber served without compensation and M.I.T. made no charge for the use of its facilities. Neither Professor Weber nor any of the staff members who assisted him had any financial interests in this or any similar product or received any fees at any time for the testing of this additive.

The tests were made under Professor Weber's direction as an independent study without reference to earlier investigations, and a report was submitted to the Senate committee in December. He reported that an evaluation

of how the product would act in practical use could be obtained only after more extensive experimentation and after field tests. Thus, Professor Weber reported in effect that from his laboratory tests it was unjustifiable to conclude that the battery additive did or did not have commercial value. His report and that of the Bureau of Standards indicate a difference in judgment as to the conclusiveness of limited laboratory tests. It is not unusual for objective scientific tests to be subject to different interpretations or for differences of opinion to occur in good faith.

At no point in Professor Weber's report is there any criticism of any previous tests on this product, for none was reviewed. The scientific integrity of the Bureau of Standards has never been questioned by M.I.T. or by Professor Weber and they never intended that the report should suggest such a question.

Emission from Single Crystals

ALL of the technology of electronics as we know it today depends upon man's ability to control the flow of electrons in metals and in the vacuum space between metals. Conduction of electricity in vacuum was discovered in 1883 by Edison, when he observed that he could measure a current between a hot filament and another electrode in one of his light bulbs. It was soon found that the current was due to a cloud of electrons coming from the hot filament, and the phenomenon was named thermionic emission. Later workers, notably, O. W. Richardson and R. H. Fowler in England, and Saul Dushman in the United States, attempted to obtain an equation which would correctly relate the current density obtainable from an emitter to its temperature and the amount of energy required to remove an electron (the work function). The relation between current density and temperature is called the Richardson equation. Although it is in qualitative agreement with the results of experiments, Richardson's equation fails to make accurate quantitative predictions of the current to be expected from a real surface. Evidently, the phenomenon was more complicated than the simple assumptions of the theory.

The theory assumes that the emitting surface is uniform and may be characterized by a single value of the work-function. For a while, it seemed that this condition was satisfied when clean, pure metals were used as emitters. However, research carried out in the Physical Electronics Group at M.I.T. in the 1930's indicated that the work function, and hence the emission, differed from one crystal face to the next in the same sample of tungsten used as the emitting surface. Accordingly, one could not hope to get quantitative agreement with the theory for any poly-crystalline emitter where the work-function observed experimentally was some sort of an average over the various work-functions that were present for the surface. Fortunately, there exists a type of drawn tungsten wire, developed for the lighting industry, in which it is possible to grow single crystals extending over the entire wire diameter and up to three or four centimeters in length. The advantage of working with large single crystals, instead of the normal poly-crystalline form of a metal, lies in the fact that some of the surfaces are uniform.

The studies now under way on these single crystals of tungsten involve a number of interesting techniques. As it comes from the manufacturer, tungsten wire, three to five thousandths of an inch in diameter, has a surface that is very deeply scarred when viewed under an optical microscope. The deep scratches left by the dies through which the wire has been drawn must be removed by grinding away the adjacent regions, and the wire must be polished until it appears as a very shiny metal cylinder under high magnification. The grinding and polishing operation may take as long as several full days and is accomplished by using an automatic wire-polishing lathe developed in this laboratory. The polished wire is placed on the axis of a cylinder vacuum tube in which it is heated by the passage of current. If the wire is heated for many hours at a temperature of about 2,300 degrees C. some of the small crystal grains grow at the expense of their neighbors, with the result that large single crystals are formed.

Once a satisfactory crystal has been observed, it is removed from the tube in which it was grown. Its diameter is measured to a ten-millionth of an inch by using the wire to form a wedge of air between two optical glass flats and counting the number of interference lines produced. The temperature of the wire during the experiment can then be obtained from this value of the diameter and the magnitude of the heating current.

To determine the energies of electrons emitted in the different crystallographic directions, the crystal is then placed in the magnetic velocity analyzer tube. In this tube, the emitted electrons from one crystallographic direction are focused by an electron lens upon the entrance slit of a metal chamber. Through the action of an externally imposed magnetic field, electrons possessing just the right amount of kinetic energy travel in circular trajectories in this chamber and are collected as they leave an exit slit. Comparisons can then be made between the energies of electrons emitted in the various crystallographic directions. Since the magnetic fields used for the measurements are quite low, it is necessary to neutralize the earth's field to within one tenth of one per cent in the neighborhood of the tube. Accurate temperature control of the crystal is maintained by monitoring a series-connected auxiliary filament with a phototube. During the measurements, the crystal is maintained at the desired temperature by pulses of heating current at 1,000 cycles per second.

It is expected that the information obtainable from detailed studies of the emission process will be of value in interpreting the behavior of more complex emitting surfaces. It should also enable us to gain a clearer picture of the electrical properties of material surfaces which play important roles in transistors as well as vacuum tubes.

The work reported here is being carried out by Andrew R. Hutson, research assistant in physics, in the Physical Electronics Group of the Research Laboratory of Electronics, under the direction of Professor Wayne B. Nottingham of the Department of Physics. Related studies on field emission from points are being conducted by John M. Houston, research assistant in the Department of Physics.

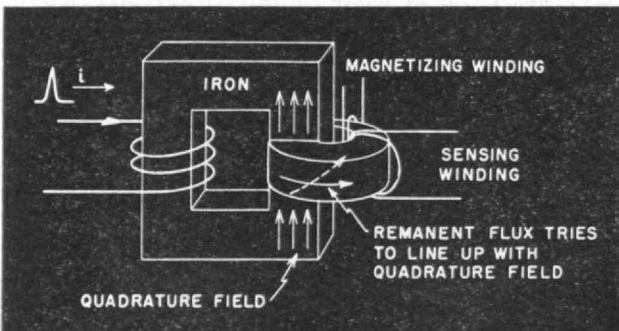
Sensing of Magnetic Cores

THE modern high-speed digital computer is built up largely of electrical devices which have two stable states or conditions very much like the on-off states of a common toggle switch. Small ferromagnetic cores can be used to store binary information through their ability to hold, or "remember," the direction in which they have been magnetized. The "memory flux" may be switched fairly rapidly from one stable state to the other. Heretofore the general method for determining, or sensing, the stored information has required switching this flux which destroys the information. There has been no quick and easy way of sensing without at the same time erasing and having to take the time and trouble necessary to re-store the information. This difficulty has now been overcome as a result of research conducted in the Institute's Digital Computer Laboratory by Dudley A. Buck, '52, research assistant, and Werner I. Frank, '53.

A "non-destructive" method of determining the direction of magnetization is under development which allows the core to be sensed any number of times without losing its information. A very short pulse of electrical current establishes a magnetic field at right angles to the memory flux. This quadrature field causes a voltage pulse to be induced in one of the conventional windings on the core; the polarity of this pulse indicates direction of the memory flux.

The operation of the new sensing scheme can be described as follows: When the quadrature field is applied, the memory flux is rotated a few degrees, from one of the two conventional memory directions, to result in a sudden decrease in the component of the memory flux which links a conventional output winding. The decrease in flux induces a voltage pulse in that winding, the polarity of which depends on whether positive or negative memory flux has been decreased. That is, the output voltage pulse is positive for one information state and negative for the other. When the quadrature field is turned off, the memory flux returns to its original direction because of the nature of the material used for memory cores which exhibits a rectangular hysteresis-loop.

Many techniques can be used to obtain the quadrature field. With metallic ribbon-wound cores, a current pulse sent directly through the ribbon produces the quadrature field. A soft iron yoke may also be used as illustrated.



A pulse of current flowing through a winding on the rectangular iron core generates a voltage pulse in the sensing winding, which is used to determine the direction of magnetization of the toroidal memory core.

Oil from Mathematics

THE increasing amount of petroleum to serve the world's industrial needs has already caused many oil fields to become exhausted, and has made the work of the prospector increasingly difficult. Temporary relief from the constantly pressing needs for more oil was afforded, about two decades ago, when the reflection seismic method of petroleum prospecting was put into general use.

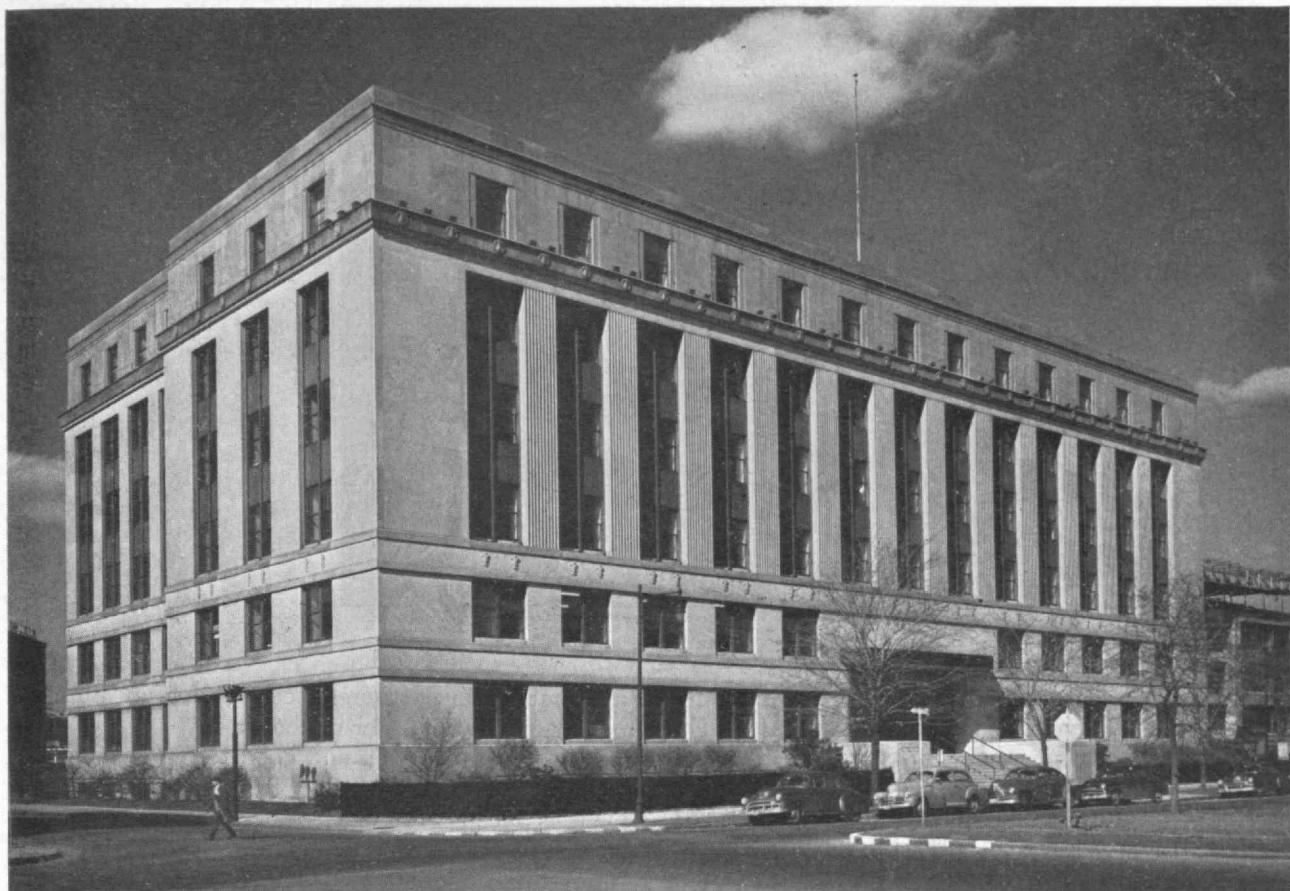
In the past few years the search for new oil has required the investigation of areas in which petroleum reserves are increasingly difficult to locate. Present-day techniques, in which the geophysicist examines seismograms visually, are reaching the limit of effectiveness for these areas. If new oil fields are to be discovered and worked economically, improvements in prospecting techniques must be continually introduced. Perhaps the greatest step forward, in the immediate future, may be achieved by more penetrating methods of analyzing seismograms, through the use of statistical techniques in which modern high-speed computers may play a significant role. The application of modern statistical methods makes it possible to separate the desired energy reflections from extraneous variations on seismic records, so that more of the information obtained in the field may be put to practical use.

Research on this problem is being carried out in the Department of Geology and Geophysics at the Institute under the direction of a staff committee, with Enders A. Robinson, research assistant, in charge of operations. The project was initiated by George P. Wadsworth, Associate Professor of Mathematics.

By applying appropriate averaging techniques to different sections of reflection seismograms, it was found that the dynamic characteristics remained fairly consistent except during intervals corresponding to a reflection. The inconsistency, or error, introduced gives a measure of the change in the dynamic properties, and hence may be used as an indication of the amount of energy reflected. By examining an error plot, derived from the original seismic record, one is able to pick off the arrival of reflected energy at places of high error. More directly, one may correlate places of high error with interfaces between sub-surface layers. Thus, such an error plot becomes a more powerful tool than the original seismogram in determining the underground structure of the earth, and consequently increases the likelihood of success before actually drilling a well.

For the seismograms thus far analyzed, results to date have indicated that the new method of analysis yields valid error plots. Moreover, such a method may even differentiate zones of greater scattering which have no single major reflecting surface. In addition, the work has yielded valuable information on the dynamic characteristics of recorded earth movements, and may also form the basis of a considerable amount of theoretical work of value to geologists.

An open invitation to petroleum companies to collaborate in this research program has resulted in both financial support and close scientific liaison between the research group at M.I.T. and the research organizations of petroleum companies.



M.I.T. Photo

Latest addition to the Institute's academic buildings is this handsome structure which houses the School of Industrial Management.

The School of Industrial Management

*A Progress Report on the Institute's Program to
Combine Education for Management with Basic
Training in Science and Engineering*

By E. P. BROOKS

IN 1951 and 1952, the Institute was the scene of significant developments in the field of education for management. Grants in excess of \$6,000,000 were made to M.I.T. by the Alfred P. Sloan Foundation, Inc., to establish a School of Industrial Management and to provide for research activities at the new School. These gifts brought to M.I.T. an extraordinary opportunity for greater service in the field of business management by making possible improved physical facilities, an enlarged Faculty, and important research resources. Included in these gifts was a grant of \$1,000,000 which provided for the establishment of the Sloan Research Fund. The Fund was to be used to expand basic knowledge in the field of industrial management and to round out the teaching program of the School. Spotlighted in these developments was the Institute's long established Course XV in Business and Engineering Administration, which became the undergraduate program in the School and whose faculty became the nucleus around which the School would be developed.

The establishment of the School of Industrial Management began a search for ideas — old ideas, new ideas, better ideas — on how to organize and develop a school for industrial management. Out of this reconnaissance of the past year or more have come certain ideas which we, in the School, believe to be basic in the development of our program. Not all of these ideas are new, nor are they all that will be developed as the School grows. Some of them involve a new emphasis and some are reaffirmations of faith. They are all the result of slow and painstaking efforts to avoid duplicating existing schools of business; in short, they represent continuing efforts to find a better approach to management education than has been evolved thus far.

There should be little doubt about the controlling ideas that have shaped the School of Industrial Management. At M.I.T., the business of laying a groundwork for accumulating management experience has long been an integral part of the Institute's teaching activities. As early as 1914, M.I.T. pioneered in or-



M.I.T. Photo

An atmosphere of friendly informality characterizes a conference on the School's educational program. In usual reading order are Eli Shapiro, Professor of Finance; Douglas V. Brown, Alfred P. Sloan Professor of Industrial Management; Edward P. Brooks, '17, Dean of the School of Industrial Management; Ronald H. Robnett, Professor of Accounting and Associate Dean; and Erwin H. Schell, '12, Professor of Industrial Management.

ganizing an undergraduate curriculum combining management and engineering education. Since then, nearly one-eighth of the undergraduate degrees granted by the Institute have been awarded to men who have taken the program in Business and Engineering Administration. In 1925, this plan of education was broadened to include an advanced curriculum in business management for graduates in science and engineering; and a program of executive development for men of about ten years' industrial experience was begun in 1931.

Over the years, the achievements in management of the men who have had this type of education present a strong case for believing that the original idea has never lost its vitality. Not only is it apparent that the successful management of industrial enterprises demands ability to cope with technological problems of ever-increasing intensity, but it is believed from experience that fundamental training in science and engineering develops habits of precise thinking which are essential in the study and practice of all aspects of industrial management. Accordingly, the form and content of the curricula have evolved as the frontiers of knowledge have grown and as industry has become more complex. But, the original purpose — to combine education for management with basic training in science and engineering — has remained unchanged.

Today, it is possible to argue that this plan of education serves a need far greater than ever before in its nearly 40-year history. With the increased size and technical nature of business enterprise, industrial management must increasingly represent a union of scientific knowledge and the entrepreneurial skill and inventiveness to apply that knowledge. Industry's drive for increased productivity has resulted in highly special skills and expensive machinery designed in many cases for unbelievably narrow purposes. Business units themselves have become a composite of distinct, though interrelated, specialties — for example, production, finance, accounting, and

distribution. Everywhere, specialization and interdependence are the order of the day.

All this may be well and good for enhancing productivity but, somewhere along the line, management is faced with making decisions affecting not one or perhaps two, but all aspects of a business. Interestingly enough, management can neither afford to do its thinking by piecemeal nor in separate compartments. Nor, for that matter, can it successfully make decisions without regard to the total of economic and social factors likely to affect the outcome of a particular business decision.

Successful management does its thinking in broad sweeps. But doing so requires a firm understanding of what goes on inside and outside a particular business. Contrary to popular belief, decision making in industry is not a chess game whose outcome depends upon hunches or crystal ball gazing. Rather, the success or failure of business judgment has come to depend largely upon the ability of management to assemble facts and to appraise the relationship between separate pieces of information and the particular problem at hand. Indeed, industrial management has become a creative study which calls for a breadth of understanding and precise habits of thought.

It is this need for broad understanding and disciplined thinking by tomorrow's business leaders that determines the outlook of the School of Industrial Management. Broadly stated, the purposes of the School are: (1) to discover means of increasing the effectiveness of industrial management and to disseminate this knowledge; and (2) to assist young men to fit themselves for future positions of business leadership. These ends, which are necessarily inseparable, are of course shared by other educational institutions. However, as an integral part of M.I.T., the School is in a unique position to promote these objectives by blending science and engineering knowledge with administrative skill.

Herbert F. Goodwin, '37, Assistant Professor of Production Management, conducts a graduate seminar in production management. Close student-faculty relations are facilitated by small classes of carefully chosen students. An awareness of the realities of business are part of the broad education for management which students receive in an environment in which science and engineering play a significant role.



M.I.T. Photo

The School aims to teach a limited number of selected young men in such a way as to contribute, as best it can, to their ultimate success in top-level management of industry. In setting this high aim, the School entertains no illusions about what it can do and what it should not attempt. Experience and constant review have led to the conviction that education for management must be a *joint undertaking* — a partnership, as it were, between industry and schools for management.

But the partnership also requires a division of labor. Industry must provide the environment and the experience required for management leadership; schools for management must lay the foundation for that experience. Chronologically, this division of labor makes sense. In terms of the equipment available to industry and to educators, the case for this joint enterprise is even clearer.

The School recognizes that industry is better equipped to train its own management specialists on a job experience basis. Therefore, the development of management specialists is not the purpose of the School nor is specific job preparation a part of its curriculum. What industry frequently cannot do, however, is to give its potential leaders the kind of fundamental education which deals with all aspects of a business but which cannot be gained by extensive experience in one or two management functions. The School regards this need for fundamentals as its maximum opportunity to render service to industry and to its students. Thus, it seeks to train managers rather than technical specialists, to develop "statesmen rather than experts."

There are two undergraduate programs in the School of Industrial Management, identical in their business and humanities content but differing in respect to science and engineering subject matter. In these four-year programs, slightly more than one-half of the student's time is occupied with engineering and scientific studies, 30 per cent of his time is

devoted to management studies. His remaining time is devoted to studies dealing with the relationship of industry to society — economic, historic, and social — and man's relationship to man. This is an important contribution of the School of Humanities and Social Studies. Course XV-A is based on the physical sciences and XV-B on the chemical sciences; both lead to the degree of bachelor of science. Together, these undergraduate programs contain the bulk of the School's students and constitute the major teaching emphasis.

The program of business subjects begins in the sophomore year with a two-term introduction to the nature of modern business and its management problems. This introduction is followed in the junior year by five required one-term subjects, each dealing with a major functional area of business management, emphasis being placed on an increasing depth of understanding of business problems and on the acquisition of a working knowledge of important managerial tools and techniques. Subjects in accounting, finance, marketing, production and personnel administration are presented from the standpoint of familiarizing students with the usefulness and limitations of these fields as tools for management. In each field, descriptive material is kept at a necessary minimum while heavy stress is laid upon problem detection and analysis. Students are required to demonstrate their ability to deal effectively with these fields by frequent oral and written reports of case situations.

In the senior year, opportunity is afforded for selection, with the aid and advice of the faculty, of from three to five one-term subjects compatible with the interests and aptitudes of the individual student. In this year the range of electives is such that the student may both broaden his knowledge by the study of new areas, and increase his depth of understanding by doing more advanced work in one or more subjects with which he already has some familiarity. An important part of the fourth-year program

is the thesis, which affords the dual opportunity of exploring in depth a problem of the student's own choice and of carrying out a limited research program on his own initiative.

There are practical limitations on the School's ability to carry out the M.I.T. philosophy of "learning by doing"; our laboratory stretches the length and breadth of American industry. There are, however, a number of reasonably effective ways to bring students into contact with industry, directly or indirectly. The faculty of the School includes a number of persons of extensive industrial experience, and close contact with business is maintained by most of the faculty through consulting activities. Close student-faculty relationships permit the student body to benefit from this experience through small discussion sections and individual counsel on thesis and other research projects. Case studies are used, where appropriate, to bring reality into classroom situations. In addition, many visiting teachers and lecturers from industry come to the School, and there are frequent student visits to commercial and industrial establishments. Student theses normally involve the analysis of actual problems in the field and thus bring students into working relationships with business concerns. By the end of the senior year, students are expected to have a keen awareness of the realities of business as well as an independence of thought which should enable them to take an open-minded and informed approach to practical problems.

The School also has a graduate program which serves recent college graduates in science or engineering through its curriculum leading to the degree of master of science in Industrial Management. The graduate program normally requires two years for those who have had no previous work in this field. Those who have completed the School's undergraduate Course in Business and Engineering Administration, or who have done substantially equivalent work elsewhere, normally obtain the degree in one year.

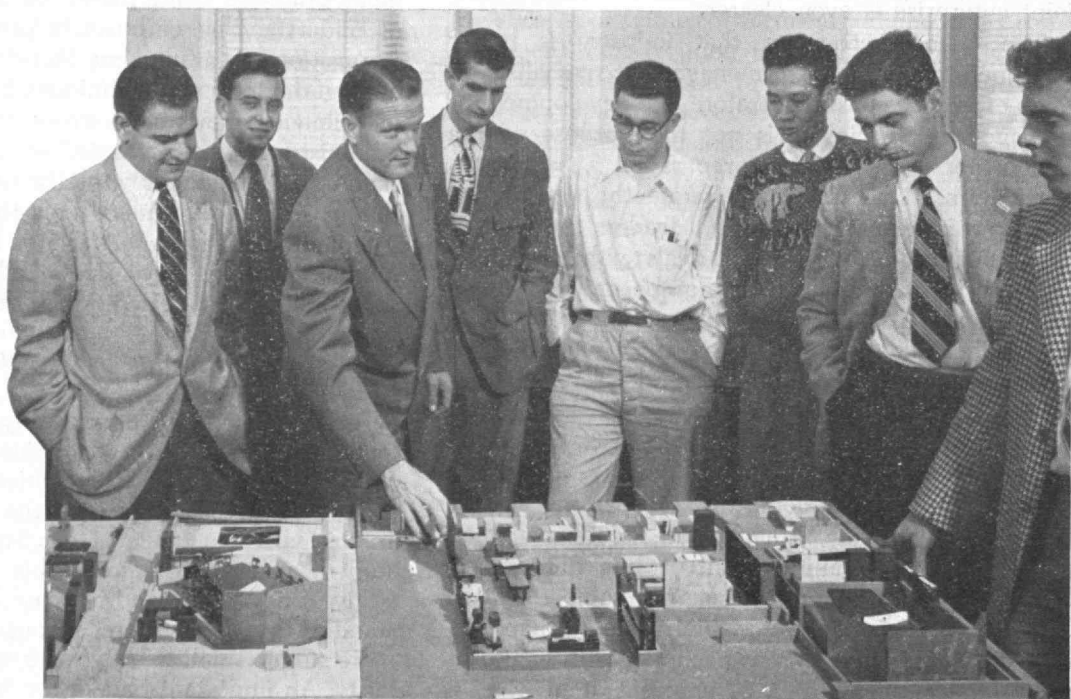
The graduate student body is small, and, relative to staff, will continue to be so. Standards for admission are high, and every effort is made to choose those men who show the greatest potential for future leadership of industry. Much of what the individual learns from his formal education, particularly at the graduate level, is dependent upon the interchange of ideas with his classmates. For its part, the School recognizes that selection is probably the most important single determinant of the effectiveness of graduate education. Hence, the advantages of careful selection are believed to be substantial. The problem of selection, both for management education and for executive positions in industry, is one of particular interest to the faculty and is the subject of continuing study in the School.

Recent expansion has brought the total graduate enrollment, including the Executive Development Program, to just under 50 students. Next year this number will be substantially expanded by (1) admission of more students in the one and two-year graduate programs; and (2) the addition of more Sloan Fellowships in the Executive Development Program.

The Sloan Fellowships are designed for men already holding responsible positions in industry; participants are selected on a nationwide basis from among candidates nominated by employers. These men must have a minimum of five years of industrial experience, have demonstrated aptitude for growth in management, and preferably, have a background in science and engineering. A special 12-month curriculum is designed to prepare them for dealing effectively with the broader and longer-term administrative problems that will be encountered as they assume higher executive responsibilities. While the subject matter dealt with by the Sloan Fellows to some extent parallels that of the regular graduate program, every effort is made to capitalize fully on the maturity and background of the group. As a result, an unusual breadth of understanding of

Active participation in discussion of the problems of industrial management typifies work in the School of Industrial Management. Here a group of students in the management laboratory discuss a student project.

M.I.T. Photo



The Sloan Executive Development Program is an important phase of work in the School of Industrial Management. Gerald B. Tallman (left) discusses the Sloan Program with Thornton A. Wilson and Wayne L. Horvitz.



M.I.T. Photo

economic and administrative problems is gained by the Sloan Fellows while, at the same time, the regular graduate students have the opportunity for extended contact with experienced men of unusually high caliber.

Continuing research on the problem of executive development has indicated that there is an additional demand for the School's services in programs of shorter length than the Executive Development Program. Many companies, particularly smaller companies, are unable to release qualified executives for a full year's advanced study at M.I.T. However, they have indicated a strong desire to participate in shorter-length programs, tailor-made to fill specific gaps in their own executive development activities.

To serve this need, plans are being laid for short, special purpose workshops designed to give participating executives a knowledge of specific managerial tools with which they have had little or no experience. This summer, the first of these programs will be held at the School — on an experimental basis. For its content, it will concentrate on Control Problems of the Executive, with special emphasis on the accounting function and accounting controls. Experimentally, it will serve as a pilot study of the abbreviated type executive development program as an aid to future planning.

Behind each of the programs described above is the all-important element of the School of Industrial Management — its faculty. Fine buildings, classroom equipment, and other facilities go for naught unless there are capable teachers to interpret principles and ideas, and to inspire students with an over-all understanding. In this regard, the School is fortunate to have started off with a corps of experienced and capable teachers. Not only have they vastly simpli-

fied the School's organizational problems, but in their hands rests the School's chief capacity for further growth.

We, in the School of Industrial Management, take a large measure of confidence from the leadership of Professor Erwin H. Schell, '12, who continues in charge of the undergraduate Course in Business and Engineering Administration and who has been the chief architect of that Course throughout much of its existence. To his students, to the Alumni of Course XV, and to those of us at M.I.T. who have had the benefit of his acumen and inspired teaching, his presence alone insures that no stones are being left unturned in the course of developing the School to meet its objectives.

Our most pressing problems are, of course, growing pains. In developing the new School and in selecting its faculty, we have sought to avoid duplication of existing schools of business. Repeating the old established patterns would have been the fast and easy way to start the School; we have chosen the slower, more difficult path of re-examining the premises of management education and of seeking a fresh approach.

We have taken a hard look at the unresolved problems facing the schools of business in the United States. Measured against the performance of schools in other fields in this country, the comparison has not been favorable; indeed, much remains to be done. In general, we have found that there is a feeling that schools of business, many of which started some 30 to 40 years ago with a great deal of promise, have somehow not measured up to all that was expected of them. Certainly, our schools of business have not distinguished themselves in their field as have our engineering schools, law schools, and med-

ical schools in their respective fields. The business schools are, of course, younger, but the concern about them has had to do with their basic programs, not with their inexperience.

Our reconnaissance so far has led to the conclusion that if the School of Industrial Management is to move toward its objectives, it will do so, not by a percentage improvement in this activity or a percentage improvement in that activity, but rather from a better approach—a better understanding of what management is and what training for it should be. To this end, our search for a better approach has been a continuing search, not merely a build-up to a once-and-for-all improvement or even to a periodic improvement, but the beginning of a continuous review and experiment.

The School does not presume to know the detailed steps it should take to realize its broader objectives. Far from this, its method of attack has centered on the principle of gathering advice from every available quarter. In our search for enlightened counsel, we have exploited every opportunity to learn by inviting comment from within and outside the School on every phase of its activities. An Advisory Council consisting of 25 leaders of American industry has been created under the chairmanship of Alfred P. Sloan Jr., '95. By acting as a sounding board for new ideas and by generating important ideas of its own, the individual members of the Council serve a double purpose. In other instances, the members have constituted an indispensable link between the School of Industrial Management and the business community.

"Task forces" have been appointed to report on specific questions growing out of the School's increased use of the many resources at the Institute and its further integration with the business community. These task forces have consisted of teams of educators and industrial leaders working together in some cases and alone in others, according to the particular assignment. An example of this work is the report by a committee of faculty members in the School of Humanities and Social Studies. The subject of their study has been "The Place of the Social Sciences in the School of Industrial Management." Another example, involving a mixed group representing educational and industrial fields is the report of the task force on marketing. The question before this group was: "What role should marketing and distribution play in the curriculum and research activities of the School?" Another team is studying the relationship of the School to the business community—and the list goes on.

As each report has materialized, it has been subjected to the give and take of faculty meetings and more faculty meetings. The upshot is that we have found it possible already to incorporate some of these constructive ideas into the School's various curricula for 1952–1953.

Not all of the recommendations brought to the School or originated internally have been entirely usable or completely new. But each has required, and has received, an evaluation of its own. Fortunately, we have been kept from chewing over too

many old bones by the accumulated experience of the Department of Business and Engineering Administration. By building around the nucleus of knowledge already at its disposal, the School has been able to focus its efforts almost entirely upon growth and development.

We have also had growing pains of another kind—the usual problems associated with adjustments in size and structure. While we have expanded the School's several parts across-the-board, our growth has not been uniform in each part. Even if it were desirable, not all of the School's activities are capable of uniform expansion immediately. For example, the expansion of educational services can be effected more rapidly than that of research in the management field. Through improved physical facilities and an enlarged faculty, the School is now ready to accommodate a larger number of students in its undergraduate and graduate teaching programs. But—research is another matter. Full benefits of research—to the School and to the business community—must necessarily await the passage of more time. This much is clear from the several projects already authorized and in progress under the Sloan Research Fund.

To sum up, our growing pains are real in the following sense: As we have reached out to meet our enlarged opportunities to serve, we have found problems commensurate with our new responsibilities. More than this, we have encountered the normal stresses and strains of a going concern growing unevenly in its several parts.

In this connection it is particularly enjoyable to review the widespread interest directed toward the growth and development of the School in the past year or more. Busy men in industry have shown an inspiring willingness to make serious and time-consuming contributions to the welfare of the School, unrestrained in many cases by their own heavy workloads. We are grateful to our Alumni of the Course in Business and Engineering Administration who have taken an active part in supporting the expanded operations of Course XV and in making valuable suggestions for charting the future course of the new School. We are indebted to the companies and other friends of the Institute who have already given generous assistance to the School's desire for closer association with the business community. An equal debt is owed to our colleagues at the Institute upon whom we have placed increased demands for science, engineering, and humanities education through our increased emphasis on fundamentals of technology.

Indeed, it is difficult to ask for more favorable working conditions than those afforded by the M.I.T. environment. As one part of an expanding galaxy, the School of Industrial Management should find it easier to utilize the facilities already existing at the Institute as well as those inherent in the Institute's indicated pattern of growth. Certainly, the opportunity to grow as M.I.T. grows should provide an additional stimulus to the School to educate men for the continuing advance of the American productive genius and our understanding of the system which underlies this progress.

Electricity in the Textile Industry

Major Problem in Textile Manufacturing Is That of Eliminating Electrical Charges on Fabrics

By SIDNEY M. EDELSTEIN

Part I of Mr. Edelstein's article, on the historical background of static electricity and the discoverers in this field of science, appeared in the May issue of The Review. Part II, presented below, discusses the problems of static electricity in the textile industry.

THE dawn of the Nineteenth Century marks the beginning of the industrial revolution, and a new dynamic age in man's life and thought. The first year of the Nineteenth Century also marks the dynamic age in electricity, for on March 20, 1800, Alessandro Volta sent a letter containing the first description of his "electrical battery" to the president of the Royal Society.*¹⁹ The interest of the scientific world in static electricity almost immediately disappeared and was transferred to electricity in motion — the power of which has so transformed our world. Almost 150 years were to pass before a revival of interest in the study of static electricity took place.

Today, the revival of interest in the science of static electricity is due mainly to the textile industry. The recent introduction of many new fibers which are strong static producers has posed problems for the manufacturer and consumer of these new textiles. The solution of these problems can be made by the application of scientific principles described long ago, coupled with our modern knowledge, in many new fields. Many of these old principles are apparently being rediscovered by workers who have not realized that the ground was covered thoroughly years ago.

How Static Develops in Textile Materials

Although the fundamental explanation as to how static can be generated in nonconductors is quite complex, in textiles there are only three mechanisms of importance.

The first important mechanism is double layer separation. When any two neutral dissimilar substances are brought into contact, electric charges occur in pairs of positive and negative kinds. Negative charges, that is to say electrons, migrate to one substance making that substance negatively charged; whereas the other substance having lost electrons becomes positively charged. Now, the positive charges on the one substance are exactly equal and balance the negative charges on the other substance. The number of charges developed in the substances depend on the chemical nature of the substances, the extent of area in actual contact, and the pressure be-

tween the two substances. We only become aware of the presence of these charges when the substances are separated. For then, if one substance is a nonconductor, such as a textile fiber, the charges which it held become entrapped and the fiber becomes negatively or positively charged. If the other substance is a conductor, then its charges are almost immediately dissipated and this substance becomes neutral. If the second substance however is also a nonconductor, it then shows a charge on separation from the textile fiber — equal, but opposite to, that on the fiber.

The second important mechanism for the generation of static electricity is friction. If two neutral dissimilar substances are rubbed together, the negative charges are rubbed off one substance and taken up by the other. Upon separating the two substances after rubbing, the nonconductor, or textile fiber, entraps its charges and becomes either positively or negatively charged. If the other material is also a nonconductor, it will have an equal but opposite charge.

Now, there is a question among scientists as to whether the mechanism for forming static electricity by friction is really different from the double layer mechanism. Some think that friction simply promotes closer contact between the two surfaces. Others believe that there is some fundamental effect caused by friction which is in addition to the effect caused by just contact of the surfaces.

The third mechanism is important only in special cases. In a flame, lighter or more diffusible particles of carbon and other substances will have a charge opposite to that of the heavier particles. When a nonconductor, such as a textile, is held close to a flame, the heavy charged particles tend to attach themselves to the textile, and the textile becomes charged, or in other words develops static electricity.

Now, with an understanding of the mechanisms whereby static electricity may be generated in a nonconductor, such as a textile fiber, it becomes easy to visualize how such generation may take place in blending, spinning, weaving, drying, and also in the use and wear of a fabric. In other words, at every point where a textile touches another substance, static electricity must be generated. Static may not be enough to reveal itself, but it's there potentially.

Troubles Caused by Static in Textile Manufacture

The effects of static electricity in the processing and manufacture of textiles are mostly undesirable effects. How undesirable these effects are will depend on

* Please see references on page 427.

The effects of static electricity for the consumer run the whole gamut from the commonplace to the unusual.

Perhaps one of the most unusual cases was that recently reported by one of the large department stores, wherein they cheerfully refunded the money to a lady who had purchased a blanket made of one of the new acrylic fibers. She was fond of listening to the radio in bed, snuggled up warm within the blanket. Everytime she moved, static electricity was generated within the blanket and spoiled her radio reception, at least so she said. Unquestionably, the public has really become conscious of the static problem in the newer fibers.

Another static story is that reported by a men's wear store of a customer who had bought a suit specially made of one of the new synthetics for summer wear, when conditions for static generation are at their poorest. This particular customer had chosen to wear the suit, however, on a cool, dry fall day. The store reported that the gentleman came running into the store shouting, "get it off; get it off." The suit was clinging and twisting around him like some evil spirit. Of course, all that would have been needed to complete the picture would have been a discharge of St. Elmo's fire from the man's head, and this would have given emphasis to a report that a man from another planet had landed from a flying saucer.

Now, most of the consumer problems due to static are much less exciting, and not too spectacular, but they are very important, nevertheless. Some have been with us for a long time, such as the shock we often get from a carpet on a cool, dry day. But of course, the static problem from the consumer point of view has only become acute with the widespread use of the synthetic fibers which began with the use of nylon, and more recently with the employment of vinyon, dacron, orlon, dynel and the other fibers based on synthetic plastic materials. These problems fall into certain distinct groups, which are common to all the fibers.

First, there is the effect of static electricity in causing clothing to cling to the body under certain conditions, or to be repelled from the body under others. The important draping qualities and appearance of the fabric, or garment, are often completely ruined by the effect of static. The uncomfortable feeling to the wearer of the garment is obvious.

Unfortunately, a textile charged with static electricity has the power of attracting uncharged particles. Therefore, the static problem in the new synthetics has added the problem of dirt attraction. This is not only a problem for the store in displaying an article made of one of the new synthetics but it is certainly an unpleasant condition for the consumer who buys a suit made of a new synthetic fiber because of its stain-resisting properties only to find that his suit attracts all the black soot and lint in the neighborhood.

Several of the synthetic plastics and fibers have been used to make so-called allergy-free pillow cases and garments because of their clean lint-free nature. But, if these articles become easily charged with static



Ewing Galloway, N.Y.

A detailed study of a modern worsted warping machine

many factors; one of the most important factors being the chemical nature of the fiber. As our fibers become more nonconducting, and as they become less moisture absorbing, each potential source of trouble due to static becomes greater. That is why, when we deal with the new synthetic fibers, every potential source of trouble from static becomes an actual source of trouble unless we take special steps to control the static. In the case of the natural fibers, such as cotton and wool, many of the potential sources of trouble never actually break out into real trouble spots, but when conditions are right, trouble will be there.

Recently a writer has pointed out that static electricity could cause four major problems in textile manufacturing, and these are:²⁰

1. Reduction of output
2. Lowering of quality
3. Increase in waste
4. Hazards to personnel

These four major problems are potentially present in most textile operations. They may exist in the blending and carding down through the drawing, sizing, knitting or weaving, and even in the final operation of inspection and packing. The potential troubles due to static in textile manufacturing are almost endless in number. As we increase our operating speeds, and particularly as we use more and more of the new synthetic fibers, these potential troubles will become real ones.

electricity under certain conditions, the attraction of almost invisible particles of dirt and spores and bacteria completely defeats the original purpose behind their use.

Finally, there is the special case where fabrics of certain of the new synthetics are made into garments for use in refinery and chemical plants. Their high resistance to chemical attack has offered a wonderful new protection to the worker. Their use, however, has also offered a potential explosion hazard because of their ability to build up static charges to the point where explosions of solvents may take place.

Now, all of these problems offer a real challenge. For the new synthetics have so many advantages that their use will increase in spite of static.

Chemical Antistatic Agents

In theory, the use of a chemical antistatic agent on the textile is the ideal method for controlling static electricity in the textile. Electrical devices can only be used at certain points past which the textile travels, and humidity can only be used to control static under certain conditions, and satisfactorily only with the older fibers. A chemical antistatic agent, however, can be put on the fiber and it will travel along with the textile to do its work at every point. Also, from the consumer standpoint the use of chemical antistatic agents is the only possible answer to static control in textiles.

This does not mean that there are no problems in connection with chemical antistatic agents. There is the problem of where to apply the antistatic agent. Should it be easily washed off, or should it be fast? What about the effect on the hand, on strength, and on the appearance of the fibers? We often must take into consideration its compatibilities with many materials. We must think about whether it will affect the light-fastness of the colors, or whether it will develop an odor. In fact, use of chemical antistatic agents poses many problems. But inherently, only by the use of chemical antistatic agents can we look for a real solution to the problem of static control in textiles.

How a Chemical Antistatic Agent Works

Actually all of the mechanisms whereby a charge can be neutralized before it builds up, and the ways whereby charges can leave the fibers, may be taken advantage of in the use of chemical antistatic agents. This does not mean that all these agents make use of all of these means but theoretically they could.

The mechanism whereby most chemical antistatic agents do their work is in the field of conductance. Now, even if the antistatic agent also makes use of other processes it always has some effect in improving the surface conductivity of the fiber, and thereby helping the charges to go more readily to ground or to the atmosphere. Any surface active agent which forms ions in solution, when placed on the surface of a fiber, even in minute amounts, must improve the surface conductivity of the fiber. On this basis, a film of soap, sulfonated oil, or synthetic detergent will improve the surface conductance of fibers, and will theoretically assist in the removal of static. It must be borne in

mind, however, that while most chemical substances applied to a fiber will increase the surface conductivity of the fiber, some chemicals are many times more effective than others in this respect. Now this is due to some fundamental relationship not understood and only partially related to the conductivity powers of the chemicals themselves in solution. There are indications, however, that the improvement in surface conductivity caused by chemical antistatic agents is related to the type of film the agent forms on the fiber, and to the way in which the molecules are oriented on the fiber.

Another way whereby a chemical antistatic agent can do its work is in the matter of hygroscopicity. This is particularly important with the new low regain synthetic fibers. We have known that the presence of moisture on the surface of a fiber would assist in the lowering of the surface resistance of the fiber and hence improve the rate of charge removal. Antistatic agents which are hygroscopic thus can do part of their work by furnishing molecules of water right on the surface of the fiber. This water also serves to activate further the chemical antistatic agents by partial solution of the active groups of the agent in the water.

Thirdly, a chemical antistatic agent may do its work by developing a charge opposite to that formed within the fiber itself when the treated textile is rubbed or comes in contact with another substance. This mechanism also seems to be related not only to the chemical nature of the antistatic agent but also to the orientation of molecules of the agent in the film put on the textile fiber, and on the nature of this film.

A chemical antistatic agent can thus do its work by any one or all three of the above-mentioned ways. It appears, however, that in order to be really effective, an antistatic agent should make use, at least to some extent, of all three.

In passing, we must not neglect to mention the possibility of the incorporation of radioactive elements within the molecule of the antistatic agent itself. It is possible to visualize a chemical antistatic agent something like a one-man band. In such a Utopia, we can see charges being conducted away to the air and to the ground, opposite charges being formed and neutralizing other charges, and at the same time the fiber being constantly bombarded with charged ions.

In conclusion, we may say that the static problem in textiles is being attacked from many angles. The manufacturers of the synthetic fibers are studying the fundamental properties of these fibers as related to the development of static electricity. Some of the national technical societies have committees at work on the problem. The manufacturers of finished textiles are carrying on extensive research projects. With the work of the past as a foundation, new ideas and new principles are being developed. This increased activity must lead to a cure for the "headache" of static electricity.

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The Modern Writer and Natural Science

More Important Than Its Details Is Understanding of Broad Principles of Science

By H. B. PHILLIPS

WHEN asked to take part in a recent conference of the Modern Language Association of America, I informed the chairman that I would try to state briefly what I thought the modern writer should know about natural science. I am not a writer, modern or otherwise, but have been interested all my life in science and have definite ideas concerning the part writers might play in enabling science to reshape the world. My remarks at the conference are presented in this brief article.

The whole universe, including living as well as nonliving things, forms one complex system. Changes in this system do not occur arbitrarily but follow definite rules, or laws. It is the business of the scientist to determine those rules and apply them. He does this partly because of his desire to know, and partly because this knowledge may enable him to influence the course of events.

To report such events is the business of the writer who uses language to picture the world as he sees it, both in reality and in imagination. He does this partly because he enjoys the process and partly because these word pictures may influence other people to proceed in the direction he wishes them to go.

If the picture he paints is to be a valid one, it must be in accord with the real world. This does not mean that he must know the details of science but only its most general principles. He may be unable to play any musical instrument; but, if he thoroughly appreciates musical harmony, his writing will have a quality which otherwise would be lacking. He may be unable to paint anything; but, if he appreciates the work of the great masters, his writing will have a finish which otherwise it would not have. He may be unable to pass an examination in any one of the sciences; but, if he has a general understanding of the nature of the sciences and what can be accomplished by scientific methods, his writing is more likely to help, and not to hinder, the general course of progress.

To show the effect of neglecting science, a few examples are presented. The November, 1952, issue of the *Atlantic Monthly* contains an article by C. S. Forester entitled "Could Napoleon Have Won?" Forester shows that the arms used by Napoleon's troops were completely obsolete. The English were using the rifle, the French had only the smoothbore. The English had shrapnel, the French only round shot for their cannon. It was not necessary for Napoleon himself to remedy these defects. The French scientists and engineers were the ablest in the world. They would undoubtedly have gladly done the job for him. Napoleon's error consisted merely in not recognizing the importance of technology.

In the Senate debate last year, a proposal was made to reduce the appropriation for research in aeronautics. Immediately following this was a proposal to in-

crease the appropriation for housing at the air fields. No one suggested that present housing was inadequate, but merely that better housing would increase the comfort of the men. A number of senators, including several who proudly call themselves liberal, voted to reduce the appropriation for research and increase that for housing. These senators did not understand the role research plays in aeronautics.

To this many would reply that these details should be left to experts. Why bother us with such matters?

The answer is that on every question of this kind there are experts on both sides. Someone must decide which experts shall have their way. In an autocracy that decision can be made by the dictator. In a democracy it must be made by the ordinary people. How then are people to have a basis for decision?

The average person completes his school or college education in his early twenties. Thereafter, for perhaps 50 years, he keeps up, at most, with some narrow specialty. Much that he learned in school has become obsolete 10 years after graduation. As he grows older, whatever competence he has to handle contemporary matters becomes more and more dependent on what he has learned after leaving school. The principal source of such education is general reading. In fact the greater part of it comes from reading fiction. What little history I know was almost all learned from novels, most of which were not even historical novels. What little understanding I have of social problems was acquired in the same way. What importance the ordinary citizen ascribes to science is determined largely by the attitude of writers who never wrote a word about science.

It is not what they directly say that is important but what is read between the lines. From a single chapter in a book a skillful detective could, in many cases, determine the whole philosophy of the writer. A casual reader consciously follows only the story. Subconsciously he acquires the same philosophy. What is wanted in general literature is, then, not the content, but something of the spirit, of modern science.

To the scientist, creation is not an operation completed billions of years ago but a process now going on and which will always continue to go on. This eternal process of creation is what life is and what life is for. In harmony with this view, one would like literature which portrays a world where philosophy is less concerned with what we are, more with what we might be; where politics is less concerned with distribution, more with production; where wealth is measured less by possession of old things, more by capacity to create new things; where the characters of fiction are less a group of neurotics and parasites, more a group of people who do something really worth while.

Mechanical Engineering

Undergraduate Professional Training Benefits from a Mature Program of Graduate Study and Research Combined with Intimate Contacts in Industry

By C. RICHARD SODERBERG

THE Institute has always been characterized by the high degree of autonomy which it confers upon its departments, many of which have enjoyed an unbroken existence since M.I.T. was founded, nearly a century ago. The Department of Mechanical Engineering is one of the oldest of these departments, and, within its domain, it displays a most varied spectrum of activity in education, research, development, and service to industry.

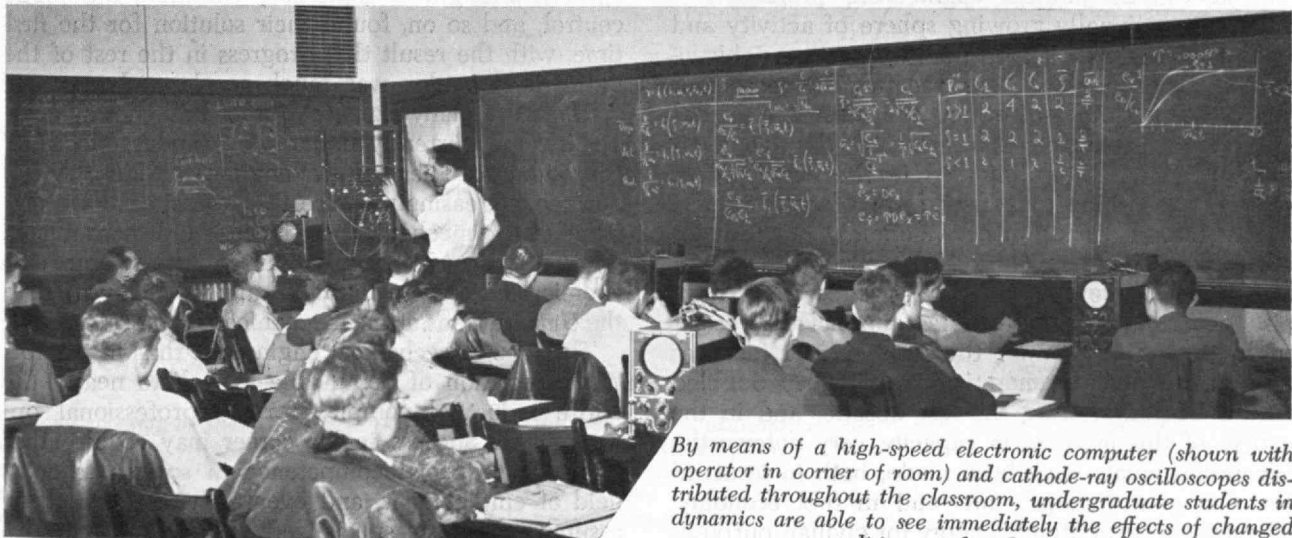
Such an extensive and variegated range of undertakings represents a far cry from the severely limited teaching activities which were carried on when the Institute commenced its operations in the 1860's. The changes and transitions which have taken place during the last 80 years have evolved gradually with the requirements for expansion of operations, and perhaps can best be appreciated when reviewed against a background of historical perspective.

Mechanical ingenuity is certainly one of the outstanding traits of Western man, and consequently, mechanical engineering may be regarded as a major branch of the technological developments of Western civilization. Man began making substantial improvements in his material status when he started to substitute power developed by mechanical means for that previously obtained from human and animal sources. The search for mechanical power led initially to the harnessing of wind and water and then to the development of the steam engine, which in turn stimulated the development of machine tools and production methods of manufacturing. The subsequent major inventions of the cotton gin, the power

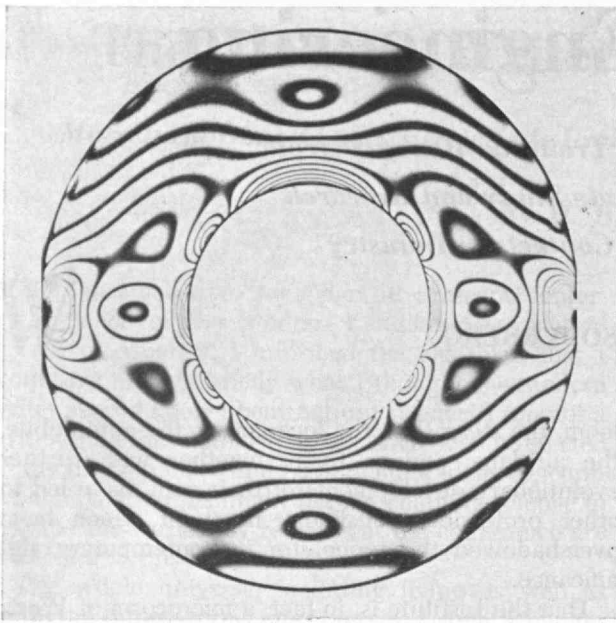
loom, the steamship, the locomotive, the automobile, the airplane, and so forth, together with further evolutionary developments of their own, have led to other professional offshoots, many of which have overshadowed the progenitor in contemporary significance.

That the Institute is, in fact, a microcosm of Western technology is merely a manifestation of the fact that M.I.T. has played a significant role in technological progress. In view of the cataclysmic changes which have taken place with the evolution of modern technology, it is reassuring and comforting to find entities which have kept pace with technical progress and yet maintained their own individuality.

The Department of Mechanical Engineering is one such entity. When the Institute's doors were first opened for classes, the original faculty of 11 members included William Watson, Ph.D., who held the title of Professor of Descriptive Geometry and Mechanical Engineering. From this title one can appreciate that, according to modern standards, the activities in Mechanical Engineering must have run on a very small scale indeed. When Professor Watson resigned in 1873, he was succeeded by an M.I.T. Alumnus, Channing Whitaker, of the Class of 1869, who was appointed assistant professor of mechanical engineering. In a very short space of time the Department grew to such a size that its teaching could no longer be handled effectively by a single professor. In fact, by the turn of the century, Mechanical Engineering had the largest enrollment of any course at the Institute. Half a century later,



By means of a high-speed electronic computer (shown with operator in corner of room) and cathode-ray oscilloscopes distributed throughout the classroom, undergraduate students in dynamics are able to see immediately the effects of changed conditions, such as beam loading.



A quarter of a century ago, photoelastic stress studies were undertaken only in advanced research laboratories, but today every undergraduate in Mechanical Engineering has opportunity to learn how to interpret stress patterns shown here.

the records show that the Institute had awarded more than 5,000 degrees to students in the Department of Mechanical Engineering. Although most of these have been bachelor's degrees, the Department is also proud of having trained almost 800 men who have received the master's degree and some 70 upon whom the doctorate has been conferred.

Role of the Mechanical Engineer Today

Since mechanical engineering activities are now diffused throughout practically all industrial operations, it is difficult to assign specific boundaries to the profession. The only fields of mechanical engineering endeavor which, throughout the years, have remained within the traditions of the profession are those dealing with power and manufacturing. These fields continue to provide inspiration for creative activity, and experience affords ample proof that professional opportunities within these areas are just as rich today as they were a generation ago.

That the mechanical engineering profession is facing a continually growing sphere of activity and opportunity is well demonstrated by recent achievements, some of which have received much greater publicity than others. Perhaps the most spectacular of these achievements is represented by the engineering which has culminated in the development of the gas turbine as a new form of heat engine. In less than a decade this development has brought about a complete revolution in aircraft propulsion. However, developments of great importance have also occurred in numerous less publicized accomplishments. For example, the steam power facilities for electric power generation have nearly doubled in this country during the last decade, and in the course of this increase in capacity very noteworthy accomplishments have been made, both in terms of the size of individual units and in fuel economy. The utilization of atomic energy for civilian purposes

will soon confront this industry with a new challenge. In the transportation industry some very striking developments have taken place since the end of World War II. Our railroads have succeeded in refurbishing their rolling stock and now operate largely with Diesel-electric motive power instead of steam. Commercial air transportation has reached the stage of jet propulsion. Natural gas from the fields of the Southwest has been made available in the North and East as a result of pipe-line developments of remarkable scope. At the same time, a very noteworthy increase in the national productive capacity has taken place. This has been accomplished not only by the development of new and more efficient machines and methods, but also by the engineer's ingenuity toward increasing the output of existing equipment. The entire field of machine tools is currently undergoing a quiet revolution as a result of the application of basic scientific research to problems of metal cutting, metal forming, and automatic control.

Developments such as those mentioned above fall directly within the scope of the mechanical engineer's activities and represent more or less direct applications of his training. In addition, however, the role of the mechanical engineer is equally significant in many of the other engineering specialties. Regardless of the major field involved, the majority of the engineering problems to be solved usually present a great many aspects which fall within the scope of mechanical engineering.

In the course of time, each field of engineering seems to go through a certain pattern of development. Following an initial phase of basic invention and application of new scientific principles, there occurs a period of consolidation in which problems of practical application are encountered in their full dimensions. Although plateaus of consolidation are sometimes regarded as being devoid of exciting developments, it is actually during this stage that most of the significant advances in the mechanical engineering aspects are made.

The design of electrical machinery went through such a consolidation about 30 years ago, when a whole series of significant problems in mechanical engineering had to be faced. Basic engineering problems in strength of materials, vibration, automatic control, and so on, found their solution for the first time, with the result that progress in the rest of the industrial complex was much accelerated.

There are many signs that other branches of engineering are currently undergoing similar epochs of consolidation. The chemical engineering industry has become increasingly aware that the special competence of the mechanical engineer is indispensable to success. Organizations in the aircraft, petroleum, and chemical manufacturing fields are especially alert to the contributions of the mechanical engineer.

The young mechanical engineer is thus in the fortunate position of being able to look to nearly the entire industrial complex for his professional opportunities. Success in his career may require that he achieve special competence in some particular field of employment, and eventually, as a result of assuming various specialized duties, he may no

longer be recognizable as an mechanical engineer. It is only fair to concede that the reverse process can also take place.

The facility with which a man trained in one branch of engineering is able to embark upon a successful career in another field is one of the sources of strength in American engineering education, in which the process of professional development is assumed to begin in earnest with the award of the bachelor's degree. Training in mechanical engineering, which provides a general background in technology, enables the young graduate to be poised for real opportunities whenever and wherever they arise. At the same time, the objective of a universal type of training, to suit all roles in which mechanical engineers may find themselves, creates difficult problems in planning an educational curriculum and in supporting professional activities of the Department of Mechanical Engineering.

Graduate Education and Industrial Relations

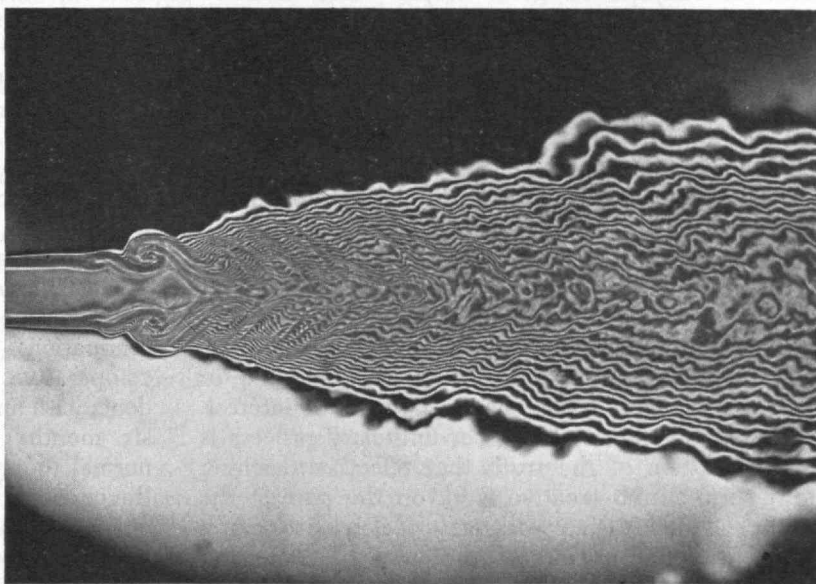
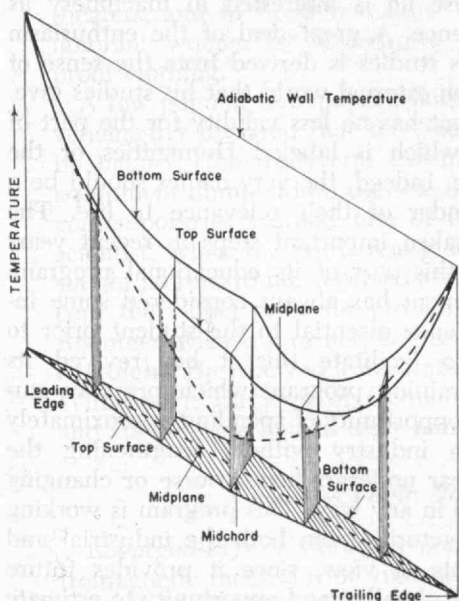
For many years the mechanical engineering program at M.I.T. consisted primarily of the undergraduate curriculum. Along with many similar institutions, M.I.T. followed the premise that effective professional training in engineering could be made part of a four-year undergraduate program. This scheme has been successful in furnishing appropriate training for the majority of men entering industry, but it does not provide the lifeblood of creative work which is so desirable for teachers, nor does it meet the recent demands of industry for engineers with advanced professional training.

Graduate work leading to the doctorate in Mechanical Engineering commenced in the 1920's and had already become significant by 1940. However, the real expansion in graduate training occurred as part of the upswing which took place in professional

education at the end of World War II. The beginning of a truly professional program in mechanical engineering, in which the undergraduate program is fed by a synthesis of research combined with advanced and mature study, is then a product of the last decade. A well-developed program of graduate study and research can attract the outstanding leader in science or technology, and in turn his presence on the Faculty attracts the gifted student who becomes creative in research or teaching.

The growth of graduate professional training in the Department of Mechanical Engineering has been accompanied by an increasingly intimate relationship with industry and the practical realization that industrial experience and connections form an essential background for all who teach mechanical engineering subjects. Because of the difficulties involved in attracting men with promising careers in industry into academic life and of enabling teachers to acquire worth-while industrial experience in the past, there appear to have been periods during which teaching lacked vitality as a result of loss of industrial contact. However, a decided step forward was made when outstanding industrial practice along the lines of development and research was recognized as equivalent to academic merit in similar undertakings. This philosophy and continued opportunity for industrial contacts have now made it possible to attract outstanding men from industry to the teaching profession. At present, several of the leaders in the Department have had the benefit of mature industrial experience, and much has been gained in this respect.

The continued growth of the undergraduate program provides ample proof of the invigorating influence of these developments. There is every reason to believe that the demand for undergraduate education in mechanical engineering will increase. For the majority of the undergraduates, the four-



Students working on theses helped to determine (left) the temperature distribution, shown here, along a wedge-shaped aircraft wing traveling at very high supersonic velocities. Interferometer photographs (right) which record changes in the refractive index of a substance, provide students with another effective method of analysis. The nozzle at the left discharges carbon dioxide into air. As air and carbon dioxide mix, the variations in density of the combination produce changes in the refractive index of the mixture which appear as alternate light and dark bands. Such interferometer patterns have been used by students studying nozzle design, or to determine how gases mix in combustion chambers.

year curriculum is still a good compromise between the pressure for increased professional background and the need to begin one's career in the competitive world. The minority who go on to graduate work will already have absorbed, from their undergraduate program, a basic philosophy and mature point of view which is invaluable in advanced studies.

Professional Scope of the Department

With the development of graduate education, it has become easier for the Department of Mechanical Engineering to reorganize certain of its groups and to promote professional orientation in specific directions. Some groups, such as those in applied mechanics, fluid mechanics, materials (including plastics and textiles), thermodynamics, heat transfer, and stress measurements, are oriented toward fields of applied science. Others, such as those engaged in machine design, automatic control, metal cutting, metal forming, and machine tools, are oriented toward processes. Finally, there is a group oriented toward specific devices, such as power plants, heating and air-conditioning equipment, internal combustion engines, and gas turbines.

While acceptable for the present as a device of operation, this structure is not intended to present a complete synthesis of mechanical engineering. Naturally, no clear definition exists as to the exact scope of this field of engineering, or even the supporting disciplines of applied science. Actually, the field contains a very large number of specialties, of which only a few can find adequate representation on the staff or in the curriculum.

The assumption that a field as extensive as mechanical engineering could be delineated by definite boundaries has been harmful, since frequently this has led to the retention in the curriculum of outmoded problems and concepts or to superficial treatment of subjects of great scope, when a more penetrating treatment of fewer topics might have provided a better training.

Educational Philosophy

Far more important than matters of external form are the ideas and ideals which underlie educational activities. These can find their expression only through individual teachers and, in the last analysis, no program can do more than provide the means of expression for the ideas of men on the staff. There is a gradual evolution going on in professional education which promises much for the future. Some of the major trends of this change may be of interest.

First and foremost in this evolutionary process is a reaffirmation of the truth that effective teaching must spring from creative work on the part of the teacher. This creative work may deal with research in the academic institution, or it may be connected with activity in industry or in government. Technological education, in particular, cannot prosper in sterile academic forms. It must feed on life itself, and anything which is significant in the technological activity of our society is worthy of serious study and the most imaginative application of scientific rigor.

These ideas were part of the basic philosophy of the Institute from its beginning, but in the course of time they came to be forgotten. In the process of revitalization of the Department of Mechanical Engineering which started two decades ago, attention was first given to the synthesis of applied sciences. The program was strengthened both with respect to scientific rigor and the relevance of the subjects to the problems of the industrial world. The process started with thermodynamics and fluid mechanics and continued through applied mechanics, particularly vibrations, control phenomena and strength of materials. The internal combustion engine and the gas turbine served as inspiring ultimate objects of application. The most recent field to be given strengthened scientific rigor is that of materials, especially certain aspects of solid state physics which have applications not only in metals but also in plastics and textiles.

Equally important as this infusion of scientific methods is the increasingly close contact with industrial operations. The bonds which unite industrial enterprises and professional institutions of learning are much stronger than they formerly were, but they need continual strengthening and reinforcement, and not only for the financial issues involved.

The response from industry to a program of co-operation between industrial and educational groups is extremely encouraging, even though many major industrial enterprises remain to be convinced that active co-operation with universities is worth while. Industrial leaders often observe, with a touch of impatience, that the engineering schools should occupy themselves with teaching the fundamentals of science, leaving to industry itself the training in technological practice. This argument has a certain force of logic but it does not take into consideration one of the most important aspects of the educational process. The boy who studies engineering usually does so because he is interested in machinery as well as in science. A great deal of the enthusiasm he feels for his studies is derived from the sense of relevance to the external world that his studies give.

This argument has no less validity for the part of the program which is labeled Humanities or the Social Sciences. Indeed, the very names should be a constant reminder of their relevance to life. The Institute has taken important steps in recent years to strengthen this part of its educational program.

The Department has always considered some industrial experience essential to the student prior to graduation. To facilitate this it has revived its co-operative training program which provides students with an opportunity of spending approximately six months in industry without lengthening the normal four-year undergraduate course or changing the curriculum in any way. This program is working out very satisfactorily from both the industrial and academic points of view, since it provides future employers with a really good opportunity to estimate a man's ability and it enables a student to make firsthand observations of certain of the technical aspects of industry, as well as those daily human relationships which are so important in everyday life.

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Problem of Ionizing Radiation

The Difference between Beneficial and Harmful Effects of Radiation Is Mainly One of Control

By HAROLD BAVLEY

THE birth of the Atomic Age occurred not with the explosion of the first atomic bomb in 1945, but just 50 years prior to that memorable event with the discovery of x-rays by an obscure physics professor named Wilhelm Konrad Roentgen, while he was engaged in research at the University of Würzburg in Bavaria. Professor Roentgen discovered that, by use of a relatively high vacuum tube invented by an Englishman, Sir William Crookes, the rays emanating from such a tube when a high-voltage current is sent through it, would penetrate objects which were opaque to ordinary light and would also affect a photographic plate. After short but intense study of this new phenomenon, he submitted to the local scientific society his findings on this new type of ray. The news of his discovery was widely publicized by newspapers and periodicals throughout the world, and everyone at that time became x-ray conscious. Dramatization of this new mysterious power, and the accompanying stories, cartoons, and poems, caused an hysteria among the populace because it came to be believed that these strange rays could "see" through anything. An irate New Jersey assemblyman introduced a bill in the state legislature prohibiting the use of these penetrating rays in opera glasses at theaters, and in London a firm "made prey of the ignorant women by advertising the sale of x-ray proof clothing."

A few popular newspapers, both here and abroad, vehemently declared that the Roentgen rays should be banned, the discoverer executed, and all x-ray equipment dumped into the sea. Some of Roentgen's contemporaries accused him of being a mercenary scientist, when the truth really was that Roentgen sought no reward nor received any monetary gain except the Nobel prize for physics in 1901. Whether Roentgen wished it or not, he became famous almost overnight. He received a decoration and a title from Wilhelm II, Emperor of Germany; and boulevards and streets were named after him.

X-rays — Their Nature

Roentgen rays or x-rays are considered to be electromagnetic radiations or vibrations (similar to ordinary light [4,000–7,000 angstroms] but of much shorter wave lengths — 10–150 angstroms) set in motion when electrons, moving at a high velocity, impinge on certain substances, especially the heavy metals. These rays are generated by passing a current, at high voltage, through a highly exhausted

vacuum tube. The radiations emanate in "bundles" or "packets" from the x-ray tube, and are not homogeneous but are made up of different wave lengths. The shorter wave x-rays are more penetrating and are known as "hard" rays; the longer wave, less energetic rays are known as "soft" rays. The higher the voltage, the shorter the wave lengths and the more penetrating the rays. The hard x-rays, therefore, are more dangerous to the deeper tissues and organs within the body; the soft rays are more easily absorbed by the outer layers of tissue, and present, if uncontrolled, a serious hazard to the skin. Where x-ray is used for other purposes than skin therapy, filters, such as aluminum, are usually provided to absorb most of the unwanted softer radiation. There were many difficulties to surmount before an x-ray tube was developed in 1913 by William David Coolidge, '96, making it possible for the operator to control the output of x-rays. Prior to this invention, it was necessary for the radiologist to have on hand several different sizes of tubes and also to have the ability of estimating the output, an obvious danger. Even the earliest Coolidge tubes were capable of continuous, stable operation at voltages up to 200,000 volts. The Coolidge tube using a high vacuum and a tungsten target, oil insulated and water cooled, at present enjoys popular use. Dr. Coolidge developed the sectional x-ray tube operating on the cascade principle. After further research, it was found that by using Freon gas instead of oil as insulation, it was possible to develop the 1,000,000- and 2,000,000-volt units which are today used by hospitals and industry.

One source of hazard results from the uncontrolled scattering of x-rays by reflection, refraction, and diffraction. Scattering becomes increasingly important at short wave lengths because of its increased ability of penetration. Suitable precautions such as location, shielding, and so on, are extremely necessary to prevent any unintentional exposure to operators and related personnel.

The ability of x-rays to cause ionization of matter, indirectly, aids in the quantitative measurement of the rays. An arbitrary unit of measurement (named in honor of Röntgen) has been devised, based on the resulting ionization caused by the rays. The roentgen is defined as that amount of x-rays which will produce one electrostatic unit of ions in one cubic centimeter of air under standard conditions of temperature and pressure. Because ionization is produced by a "radioactive source," the roentgen is used also as a unit of measurement of the ionization produced by the radio-

active substances. Suitable instruments have been developed to measure the amount of ionization produced by x-rays and are a means of evaluating the potential hazard.

X-rays — Their Injury Experience

Soon after the discovery of x-rays, the claims which Roentgen had made for these new rays were substantiated, and workers in medicine and science soon realized the importance of this discovery, particularly in diagnosis and treatment. However, there was no appreciation of the hazard presented by these rays, for little was known except that the rays could be created and used as a part of a valuable technique. Within a period of one half to two years from the date of discovery, a series of injuries were reported among the personnel using x-rays. In 1907, Dean reported 20 to 30 cases of occupational dermatitis in Great Britain. By 1911, Krause reported that 26 cases of carcinoma were recognized among the medical staff, 24 cases among the technical staff manipulating the apparatus, and 4 among patients treated. During the same era, Hesse cited 94 cases of carcinoma.^{*} Kaye states in his book *Roentgenology*,† “A succession of deaths from aplastic anemia brought matters to a head in England in 1921. Public opinion was stirred and the assurance companies began to regard the roentgen-ray worker with an unfavorable eye.”

The number of x-ray injuries resulted in the formation of committees among the various scientific groups for the promulgation of rules and regulations for the proper use of equipment producing x-rays, and for the protection of the personnel who might use or be exposed to this potentially dangerous source of ionizing radiation. The codes developed for the safe use of x-rays have served as a foundation for codes developed for the prevention of injury from other sources of ionizing radiation, such as natural and artificial radioactive isotopes. Unfortunately, there are those who, due to unfamiliarity or lack of knowledge of the hazards of x-rays, are still being injured even at this time. In 1941, in a West Coast shipyard, unauthorized persons, uninstructed in the use of industrial x-ray equipment, entertained themselves by observing their hands and feet on a fluorescent screen. The ensuing injuries to 59 employees were of such severity as to result in amputations in several of the injured personnel. This tragic example emphasized the need of rules and regulations governing the handling of x-ray equipment.

X-rays cause both local and systemic injury depending upon the quality, quantity, and dosage. Locally the skin may be affected in many ways. Small daily doses may cause the skin to become dry and inelastic, with the nails becoming striated and brittle; in addition, painful wart-like growths may appear on the skin. When exposure is high, a severe burn may result. If the skin is damaged to any great extent,

ulcers or cancer may develop. Temporary or permanent sterility may result from a high degree of exposure localized in the area of the reproductive organs. Injury and defective changes due to excessive radiation may occur in the fetus when the uterus of a pregnant woman is subjected to excessive x-radiation. Systemically, excessive exposure may cause damage to the blood-forming organs, and dyscrasias, such as leukemia, leukopenia, and aplastic anemia may result. Excessive exposure can cause cancer, destruction of the bones, or both. In several cases, which have been studied, the injury has progressed to a fatal termination.

The ionization of tissue results in the damage just mentioned. X-rays and radioactive substances will produce similar injuries, the severity being dependent upon the amount of ionization produced in the body.

First Commercial Use of X-rays

X-rays were first used commercially (for nonmedical purposes) in 1922, at the Watertown Arsenal as an aid in furthering the development of improved foundry techniques. Detection of hidden defects, such as cracks and blowholes in castings, and defects in alloys from faulty mixtures by means of x-rays, assured the use of satisfactory castings where needed. Besides its use in metallurgical inspection, x-rays provide industry with the means to learn about the “inside” of any article without destroying it in any way. X-rays may be used in two ways. Many articles may be examined by fluoroscopy, in which a shadow image is formed on a fluorescent screen. Fluoroscopy is of value in determining whether or not component parts of an article are in proper position and may also be used to sort vegetables, fruits, and so on, revealing spoilage or adulteration of the product. X-rays are employed also in obtaining permanent records. Instead of the image appearing on a fluorescent screen, it is recorded permanently on photographic film. Radiography is of value not only for determining whether a product has been manufactured satisfactorily, but may be also used in analytical determination of mineral substances by photographing the diffraction pattern.

Radioactivity — Discovery and Development

In his search for substances which would affect a photographic plate similar to x-rays, Henri Becquerel discovered in 1896 the phenomenon of radioactivity during the investigation of uranium. The Curies, following Becquerel's research, discovered radium and produced it in its metallic form in 1902. However, radium as we know it today is produced as a salt of radium; as a chloride, a sulfate, a bromide or a carbonate. The manufacturing method used by Madame Curie and André Debierne is still the method of choice today. This method consists of three stages involving the grinding of ore, treatment with acids, and the elimination of the acids by washing and fractional crystallization. Other radioactive elements discovered by the Rutherfords and the Curies, by separating and identifying the radioactive compounds, led to the de-

(Continued on page 446)

^{*} *Occupation and Health* (Geneva: International Labour Office, 1934), II:777-786.

† George W. C. Kaye, *Roentgenology: Its Early History, Some Basic Physical Principles and the Protective Measures* (New York: Paul B. Hoeber, Inc., 1928).

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

From the Ballot Box

BALLOTS for election of officers to guide the affairs of the Alumni Association for the fiscal year which begins on July 1, 1953, were counted on April 25 and indicated that the men named below will serve as officers of the Alumni Association, alumni term members of the M.I.T. Corporation, members of the National Nominating Committee, and class representatives on the Alumni Council.

Horatio L. Bond, '23, will ably fill the office of president of the Association for one year. The vice-presidency will be held by Richard S. Morse, '33, and the two new members of the Executive Committee are Avery H. Stanton, '25, and Frederick B. Grant, '39. Messrs. Morse, Stanton, and Grant will serve for terms of two years.

Elected to serve as alumni term members of the M.I.T. Corporation for a period of five years are: Clarence D. Howe, '07, Edwin D. Ryer, '20, and James H. Doolittle, '24. To fill the unexpired term of the late

C. Adrian Sawyer, Jr., '02, on the M.I.T. Corporation, Robert C. Sprague, '23, was named.

Members of the National Nominating Committee for their respective districts have been chosen for a term of three years, as follows: Laurence P. Geer, '15, for District 8; Robert J. Joyce, '28, for District 9; and Richard L. Cheney, '27, for District 10.

To serve a five-year period, Class Representatives on the Alumni Council were voted on by members of the classes whose numerals end in four or nine, with the following results: George Owen, '94, Miles S. Sherrill, '99, Eugene H. Russell, Jr., '04, Arthur L. Shaw, '09, H. B. Richmond, '14, George W. McCreery, '19, G. Raymond Lehrer, '24, Eric A. Bianchi, '29, Henry B. Backenstoss, '34, Frederick B. Grant, '39, Robert D. Peck, 2-44, Albert B. Van Rennes, 10-44, and Archie H. Harris, 3d, '49.

A count of the ballots shows 3,148 valid votes cast for officers of the Alumni Association and for members of the National Nominating Committee; 2,598 for alumni term members of the M.I.T. Corporation.

Class Reunions

Listed below is the latest available information on class get-togethers and reunions which are to be held in conjunction with Alumni Day on Monday, June 15, and on other dates:

- | | | | |
|------|---|------|---|
| 1891 | June 13. Dinner at 1:00 P.M. at The Country Club, Brookline, Mass. | 1916 | June 5-7. Coonamessett Ranch Inn, North Falmouth, Mass. |
| 1893 | Dinner at M.I.T. Faculty Club. Leonard B. Buchanan, reunion chairman, Stone and Webster, Inc., 49 Federal Street, Boston. | 1918 | June 12-14. Weekapaug Inn, Weekapaug, R.I. Reunion chairmen: Max Seltzer, 87 Ivy Street, Brookline, Mass.; Saxton W. Fletcher, 880 North Street, White Plains, N.Y. |
| 1898 | June 15-17. Reunion headquarters after Alumni Day, June 15, at Hotel Vendome, Boston. June 16, guests of Roger Babson at Wellesley; June 17, The Country Club, Brookline, Mass. Lester D. Gardner, reunion chairman, 875 West End Avenue, New York 25, N.Y. | 1921 | June 15. Class cocktail party at Hotel Statler, Boston, preceding Alumni Banquet. |
| 1900 | June 16-18. The Pines, Cotuit, Mass. Elbert G. Allen, Secretary, 11 Richfield Road, West Newton, Mass. | 1922 | June 15. Cocktail party at Hotel Statler, Boston, preceding Alumni Banquet. |
| 1903 | June 12-15. June 12, participation in commencement exercises; June 13 and 14, 50th reunion celebration at Coonamessett Ranch Inn, North Falmouth, Mass.; June 15, participation in Alumni Day events. Carlton F. Green, reunion chairman, Stone and Webster, Inc., 49 Federal Street, Boston. | 1923 | June 11-14. Sheldon House, Pine Orchard, Conn. Channing P. Clapp, reunion chairman, 210 Main Street, Matawan, N.J. |
| 1905 | June 19-21. Wianno Club, Osterville, Mass. | 1928 | June 12-15. 25th reunion at Baker House, M.I.T., Cambridge, June 12-14. Participation in Alumni Day events, June 15. William H. Carlisle, Jr., reunion chairman, Room 5-121, M.I.T., Cambridge. |
| 1908 | June 12-14. Snow Inn, Harwich Port, Mass. H. Leston Carter, reunion chairman, 14 Roslyn Road, Waban 68, Mass. | 1933 | June 12-14. Wentworth by the Sea, Portsmouth, N.H. Charles C. Bell, Universal Winding Company, Elmwood Avenue, Cranston, R.I. |
| 1911 | June 19-21. Informal get-together at Snow Inn, Harwich Port, Mass. | 1938 | June 12-14. Curtis Hotel, Lenox, Mass. A. Louis Bruneau, Jr., reunion chairman, 412 Ponfield Place, Ridgewood, N.J. |
| 1913 | June 12-14. Oyster Harbors Club, Osterville, Mass. William R. Mattson, reunion chairman, 28 Brookdale Road, Newtonville 60, Mass. | 1943 | June 12-14. Mayflower Hotel, Plymouth, Mass. James F. Hoey, Jr., reunion chairman, 1826 Center Street, West Roxbury 32, Mass. |
| | | 1948 | June 13-14. Mayflower Hotel, Plymouth, Mass. Richard H. Harris, reunion chairman, 26 South Street, Grafton, Mass. |

For further information, please consult your class secretary or reunion chairman to make arrangements for attending a class get-together and the events of Alumni Day on June 15.

Alumni Day, 1953

CLIMAXING reunion activities for several classes, as well as celebrating a yearly occasion for others, will be the events of Alumni Day on Monday, June 15. Alumni who return to Cambridge for this annual event will participate in a day planned for the enjoyment of good fellowship evoked by a renewal of friendships and of familiar sites.

Registration will be in the morning in the lobby of Building 7 (Rogers Building), and at 10:30 A.M., the following Departments will hold open house: Aeronautical Engineering, Biology, Business and Engineering Administration, Chemical Engineering, Civil Engineering, Electrical Engineering, Food Technology, Mechanical Engineering, and Naval Architecture and Marine Engineering.

A buffet style luncheon is scheduled at 12:30 P.M. in the Great Court, when James R. Killian, Jr., '26, President of the Institute, will address the guests. The World War II Memorial, in the lobby of Building 10, will be dedicated at 3:00 P.M., and following the dedication, President and Mrs. Killian will welcome Alumni at an Open House at their home at 4:00 P.M.

Topping the day's events for Alumni, at 7:00 P.M. will be the annual Stein-on-the-Table Banquet at the Hotel Statler. Erwin D. Canham, editor of the *Christian Science Monitor*, will be the principal speaker at the banquet, and presentation of gifts to M.I.T. will be made from the 25- and 50-year classes. Alumni who attend the banquet will receive a new stein designed by Henry B. Kane, '24, Director of the Alumni Fund, to add to their collection. At the Statler, there will also be a special banquet for the ladies at which the speaker will be Mrs. Elspeth D. Rostow, Assistant Professor of History in the M.I.T. Department of Economics and Social Science.

Chairman and cochairman, respectively, for Alumni Day, 1953, are George W. McCreery, '19, and Theodore T. Miller, '22. Those serving on subcommittees

follow: *Banquet*: Donald W. Kitchin, '19, chairman, Arthur H. Blake, '19, James Donovan, '28, Eric A. Bianchi, '29, Clarence R. Westaway, '33, Albert O. Wilson, Jr., '38, Richard J. Zeamer, '43, Harl P. Aldrich, Jr., '47, Richard H. Harris, '48; *Departmental Reunions*: Carl F. Floe, '35, chairman, Philip A. Stoddard, '40, Kenneth R. Wadleigh, '43; *Luncheon*: E. P. Brooks, '17, chairman, Alan W. Burke, '20, Cheney Salmon, '26, Randolph Antonsen, '35, Frederick B. Grant, '39, Oswald Stewart, 2d, '39, Theodore P. Heuchling, 2-46, Donald A. Hurter, 6-46, Richard A. Snow, '48; *Ladies*: Mrs. John B. Wilbur, chairman, Mrs. E. P. Brooks, Mrs. Gordon S. Brown, Mrs. Walter H. Gale, Mrs. Ralph T. Jope, Mrs. James R. Killian, Jr., Mrs. Robert M. Kimball, Mrs. Donald W. Kitchin, Mrs. George W. McCreery, Mrs. Theodore T. Miller, Mrs. Avery H. Stanton; *Registration*: Wolcott A. Hokanson, staff, chairman, G. Edward Nealand, '32, Robert E. Hewes, '43; *Transportation*: Emmons J. Whitcomb, '11, chairman, Malcolm S. Stevens, '34.

Dollar to Doughnut

WARREN K. LEWIS, '05, who is a very much revered and almost fabulous character in the engineering world, is technically a professor emeritus in the Department of Chemical Engineering. Actually, he is, of course, very much on the job. His greatest pride is in his former students — some of whom have collected "Doc's" stories both for their own enjoyment and as an unusual method of recognizing and honoring his retirement.

"The Lewis Story," appearing under the title of *A Dollar to a Doughnut*, is a privately printed, 62-page booklet of anecdotes of the teaching and professional experience of Professor Lewis, and almost each story has an appropriate illustration by Henry B. Kane, '24, Director of the Alumni Fund. Copies of *A Dollar to a Doughnut* may be obtained for \$3.00 each from Professor Thomas K. Sherwood, '24, of the Department of Chemical Engineering, M.I.T.



Although M.I.T. is known primarily for the quality of its education in science, engineering, and architecture, its Alumni frequently achieve distinction in a wide variety of other fields as well as in these three. In recognition of "outstanding services in the field of international statesmanship" members of the Class of 1907 recently presented this handsome cup to Clarence Decatur Howe, '07, Minister of Defence Production in Canada. The silver cup was designed and fashioned by Leverett H. Cutten, also of the Class of 1907.

FACULTY

Promotions

and

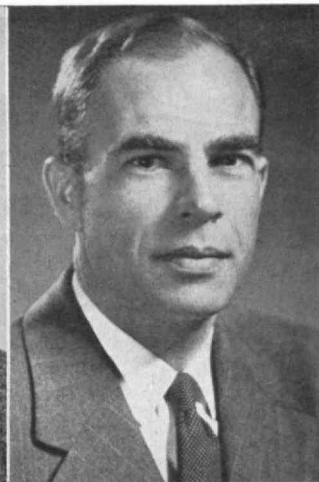
Appointments



R. L. Bisplinghoff



M. Deutsch, '37

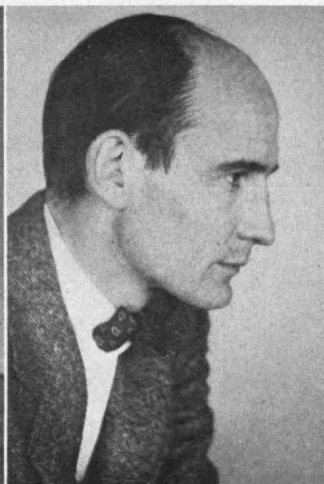


P. M. Hurley, '40

M.I.T. Photos



C. C. Lin



E. E. Morison



M. C. Shaw



H. H. Uhlig, '32

ACCORDING to a recent announcement by James R. Kilian Jr., '26, President, the Institute has acquired eight new full professors — seven by promotion and one as a new appointment. In addition, 11 assistant professors have been promoted to associate professor, and three new associate professors have been appointed to academic posts.

Members of the staff promoted to the rank of full professor are: Raymond L. Bisplinghoff, Department of Aeronautical Engineering; Patrick M. Hurley, '40, Department of Geology and Geophysics; Elting E. Morison, School of Industrial Management; Chia-Chiao Lin, Department of Mathematics; Milton C. Shaw, Department of Mechanical Engineering; Herbert H. Uhlig, '32, Department of Metallurgy; and Martin Deutsch, '37, Department of Physics.

Assistant professors promoted to the rank of associate professor are: Robert K. Mueller, '32, Department of Aeronautical Engineering; Charles N. Satterfield, '43, Department of Chemical Engineering; C. Gardner Swain, Department of Chemistry; Morris A. Adelman, Department of Economics and Social Science; Alexander Kusko, 2-44, and William K. Linvill, 6-45, both of the Department of Electrical Engineering; E. Neal Hartley, Department of English and History; William Van Alan Clark, Jr., '42, School of Industrial Management; Benjamin L. Averbach, '47, Department of Metallurgy; S. Curtis Powell, '37, Department of Naval Architecture and Marine Engineering; and Malcolm W. P. Strandberg, '48, Department of Physics.

Promotions to the rank of assistant professor are: Howard P. Jenerick, Department of Biology; James E. Boyce, and Romney Robinson, '51, both of the Depart-

ment of Economics and Social Science; David J. Epstein, '49, Earl W. Keller, '49, Denis U. Noiseux, 9-46, Fazlollah M. Reza, Paul E. Stoft, '49, and Paul E. Smith, Jr., all of the Department of Electrical Engineering; Alfred D. Chandler, Jr., Thomas F. O'Dea, and Robert E. MacMaster, all of the Department of English and History; Roger M. Stinchfield, '40, Department of Food Technology; John F. Nash, Jr., Department of Mathematics; and Jack B. Chaddock, '49, Nathan H. Cook, '50, Leonard Maunder, Gerhard Reethof, '47, Robert H. Shoulberg, '48, David K. Felbeck, '49, Eugene L. Foster, and Donald R. Walker, '50, all of the Department of Mechanical Engineering.

New appointments include: John M. Buchanan who will be professor and head of a new Division of Biochemistry in the Department of Biology (as already recorded in the December, 1953, issue of *The Review*); Walter Isard, Associate Professor in the Department of City and Regional Planning; Ithiel de Sola Pool, Associate Professor in the Department of Economics and Social Science; John M. Blum, Associate Professor in the Department of English and History; Yao T. Li, '38, Assistant Professor in the Department of Aeronautical Engineering; Robert B. Fetter and Robert H. Gregory, Assistant Professors in the School of Industrial Management; Andrew A. Root, Assistant Professor in the Department of Mechanical Engineering; Thomas B. King, Assistant Professor in the Department of Metallurgy; and Morton G. Wurtele, Assistant Professor in the Department of Meteorology.

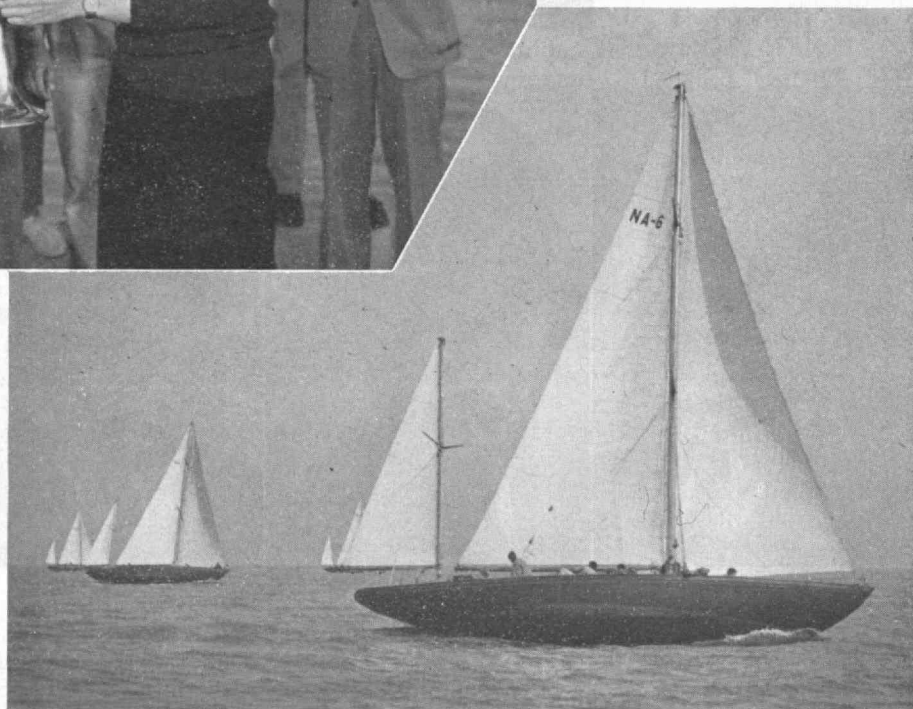
Promotions of military personnel include those of Commander James A. Brown, '41, and Major Vincent J. Gangemi.



Official U.S. Navy Photographs

Vice-Admiral C. Turner Joy, Superintendent of the Naval Academy, awards the McMillan Trophy to Horacio Garcia, '54, skipper of the M.I.T. sailing crew which won the 1953 McMillan Cup Regatta held on April 4 and 5 at Annapolis. Looking on (left to right) are: Alain J. Deberc, '55, Edward A. Melaika, '53, Peter Felsenthal, '54, John G. Sample, '53, John H. Rieman, '54, Justin E. Kerwin, '53 (hidden by Garcia), Milton L. Almquist, Jr., '54, and an unidentified naval observer.

As the starting gun resounded across Chesapeake Bay, yachts representing 10 Eastern colleges and universities began the 1953 McMillan Cup Regatta. The annual sailing event, sponsored by the United States Naval Academy, was held on April 4 and 5 at Annapolis. An eight-man crew from M.I.T. took first place honors in the two-day race. Second place went to Harvard University, and Williams College took third place. M.I.T. sailors piloted one of the Naval Academy's 44-foot yachts shown below.



Housing Conference

HOUSING in relation to the economic problems of foreign lands was the subject of a three-day conference sponsored by the Albert Farwell Bemis Foundation at the Institute, from April 30 to May 2, 1953. The Conference on Economic Development and Housing Abroad was planned by Burnham Kelly, '41, Director of the Bemis Foundation. The M.I.T. Center for International Studies and the Departments of Architecture and of City and Regional Planning assisted in presenting the program.

The conference opened on Thursday morning with comments by Albert M. Cole, Administrator of the U.S. Housing and Home Finance Agency. As the principal speaker at the conference dinner on Thursday, April 30, Sir Percy C. Spender, Australian Ambassador to the United States, discussed economic developments in south and southeast Asia.

In addition, nearly 40 other experts from throughout the United States and several foreign countries participated in conference sessions. At least 150 architects and foreign aid and housing specialists attended the three-day program.

Commenting on plans for the conference, Mr. Kelly noted that:

... proposals for international development tend to be formulated by economic planners, and the importance of the role to be played by physical planners is often overlooked. Furthermore, the training of designers should be greatly improved by confronting them with the unfamiliar problems of the resources, desires, and needs of another culture.

Great sophistication is often required to work with limited resources and objectives, and the habit of looking behind appearances for facts is more easily developed in unfamiliar surroundings. The conference also continues the interest of the Bemis Foundation in the design implications of production of houses in large quantities. The contribution of a trained designer able to make appropriate use of local skills and resources, becomes a significant part of economic development plans.

The conference reflected the desire of numerous students in this country to do useful work abroad. Many students in the School of Architecture and Planning who come from abroad and who desire training to deal with unusual problems in their native lands found the conference of unusual educational value.

BUSINESS IN MOTION

To our Colleagues in American Business...

Here is another example of thorough collaboration between a supplier and a customer, and the values obtained thereby. The case involves the production and bending of copper tube whose wall is rather thin relative to its diameter. The tube is formed into exhausts for fine pleasure craft, sailed the country over in both fresh and salt water. The boat builder specifies copper for this application, because of its corrosion resistance, which means long life, economy, and the satisfaction of yachtsmen.

However, the tube is not bent at the shipyard; an outside bending firm applies its skill to this exacting task.

- When Revere suggested that it was a good source of supply for copper tube, we were promptly turned over to the fabricator of exhausts, with the statement that he was the one to be satisfied, that his high requirements had to be met, and that the boat company would merely inspect exhausts to make sure that they met specifications, including not only dimensions and curvatures, but the complete absence of cracks and wrinkles where the tube is bent.

- This at first glance seemed to be an unusual problem. The exhausts run in size from two to three and a half inches, outside diameter, with a wall of .049 inch. That wall was dictated by the desire to save weight. If the exhausts had been made of rustable materials, naturally they would have been much thicker and heavier. Revere's Technical Advisory Service visited the tube bender's plant and studied produc-

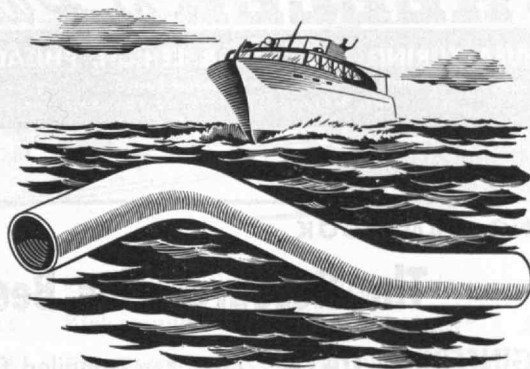
tion methods. Complete details were discussed with the Methods Department at the Revere Mill which would be responsible for quality. Everybody realized that here was a challenge. The mill, fortified by exact knowledge of what was needed, set up special standards of control over roundness, concentricity and temper.

- Production tube worked perfectly from the very beginning. No wrinkling or tearing has been encountered by the firm which bends the tube. This is a tribute to their skill, as well as ours.

The happy people who enjoy life afloat in the boats containing these copper exhausts have no idea of the care and attention given by so many people to a part of which they may be entirely unconscious, but which serves in its own way to protect their pleasure

and their investment in carefree yachting.

- Perhaps you, too, have problems which can be solved successfully by complete collaboration with your suppliers. If you give them, as this tube bending company gave us, every opportunity to study production methods and end uses, perhaps they may be able to find ways and means to lessen rejects, speed up production, save you money. Don't hesitate to ask. After all, in every bill there is an unseen item for the cost of the knowledge, experience and skill necessary to produce fine materials. You might as well obtain the plus values that lie behind the gallons or pounds or feet or tons of what you buy.



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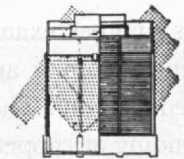
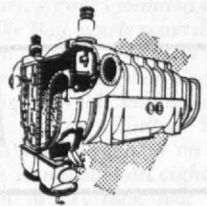
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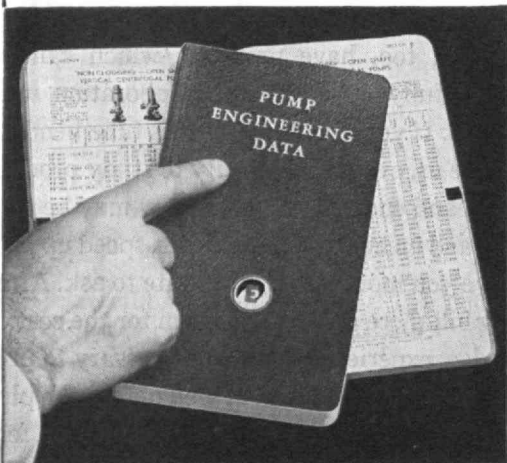


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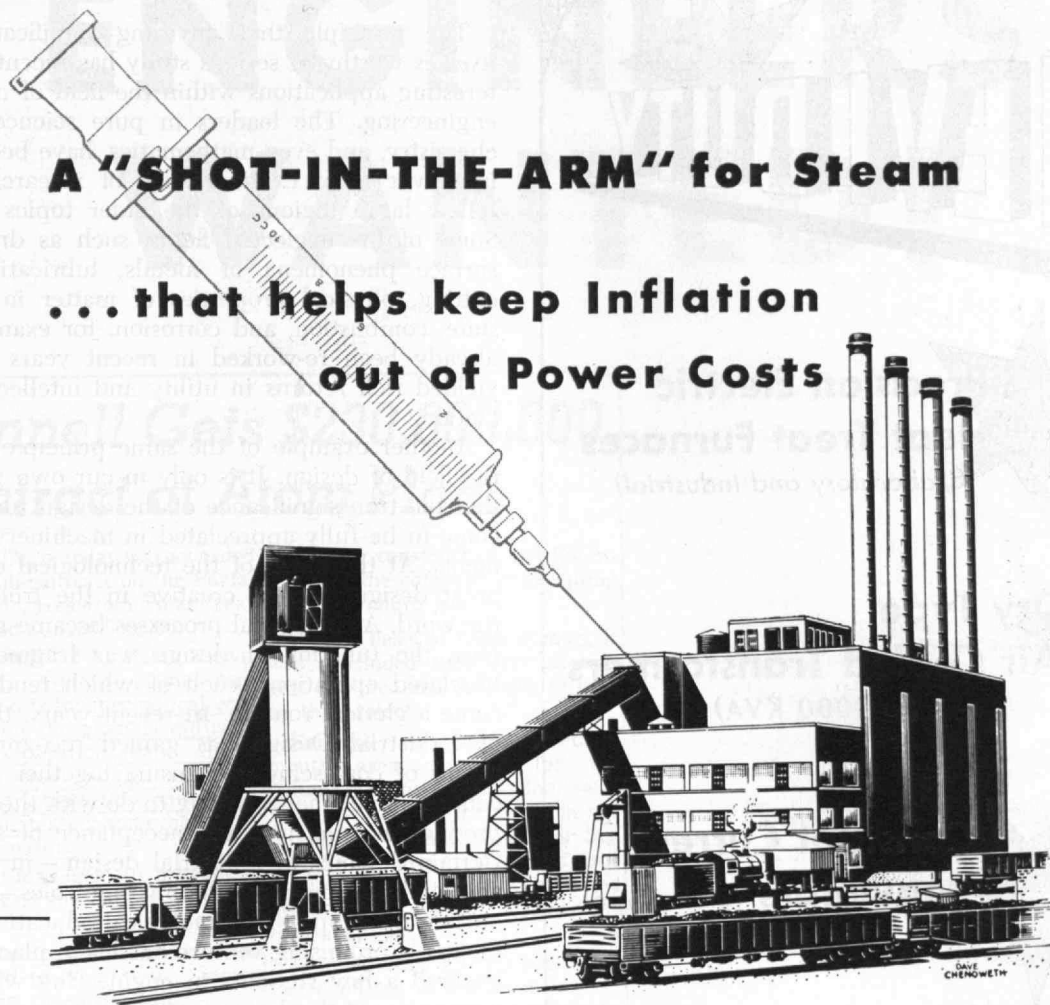
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The principle that anything significant to life itself is worthy of serious study has recently had interesting applications within the field of mechanical engineering. The leaders in pure science, physics, chemistry, and even mathematics, have been enticed into ever more exotic realms of research, leaving fallow large regions of the older topics of study. Some of the neglected fields, such as dry friction, surface phenomena of metals, lubrication, metal cutting, physical properties of matter in the solid state, combustion, and corrosion, for example, have already been re-worked in recent years and have yielded rich returns in utility and intellectual satisfaction.

Another example of the same principle occurs in the field of design. It is only in our own generation that the true significance of the design function has come to be fully appreciated in machinery developments. At the dawn of the technological epoch, the great designers were creative in the true sense of the word. As industrial processes became more complex, the function of design was fragmented into unrelated operations, each of which tended to become a clerical routine. In recent years, the subject of Industrial Design has gained recognition as a means of coalescing and fusing together all significant design elements having to do with the planning, production, sale, use, and acceptance of a product. Certain domains of industrial design—in which art and architecture play dominating roles—may fall outside the scope of technological education. Nevertheless, a promising venture has taken place and has inspired a few students in engineering with a new perspective of the design function.

The new sense of belonging to the industrial world, which has come about as the result of developments such as those enumerated above, has also brought impatience and dissatisfaction with some of the outmoded forms of engineering education. Perhaps some of the worst offences were committed in stereotyped unimaginative laboratory exercises which outlived their former usefulness and today seldom represent noteworthy intellectual experiences.

Although some elements of the old-fashioned laboratory instruction may have to remain, interesting and valuable experiences have been obtained by a modified approach to the concept of "learning by doing." One very promising approach is that which permits students to attack mature problems in teams, working under assigned leaders chosen from among themselves and supervised by members of the staff. Certain industries have co-operated in these programs without expectation of return on their modest investments, except the hope of interesting students as potential employees. The scheme has obvious limitations and requires instructors having special qualifications in psychology as well as in teaching and technical competence. But it has already done much to give vitality to laboratory instruction, and the students have the thrill of participating in a stimulating experience. It represents a workable

(Concluded on page 444)

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ENGINEERS WANTED!

Grinnell Gets \$230,000,000 Contract at Atom Plant

Grinnell Corp. today was awarded a major sub-contract on the Portsmouth, Ohio, area atomic plant that is estimated at \$230,000,000.

It was awarded by Peter Kiewit Sons' Co., A-plant prime contractor, and is for mechanical construction on the gaseous diffusion uranium separation plant. It includes process piping, auxiliary piping, instrumentation, equipment installation, testing and other work of related nature.

Grinnell management believes it is the largest mechanical contract ever let.

"We consider it quite an honor to be selected to do the job," James D. Fleming, president, said.

"It is too early to say what effect the providing of materials will have on the company's operations here," he added.

The award to Grinnell followed several months of study by officials of the Kiewit Co. with the Atomic Energy Commission.

Factors in the selection of Grinnell Corp. included its background and experience in large-scale mechanical construction, its manufacturing techniques, availability of top level management and technical personnel, the status of present commitments on large-scale

jobs under construction and the interest of the company in accepting the Portsmouth job.

On the basis of these studies, it was concluded that Grinnell was best qualified and best able to take on the project.

Kenneth A. Dunbar, Portsmouth area manager for the Atomic Energy Commission, said: "We feel we are fortunate in obtaining the Grinnell Corp. for this job. We put in a great deal of time in search for the right concern and are confident we have obtained the best available."

Grinnell Corp. already has established offices in Portsmouth.

S. F. Mathes, a Brown graduate, who has been affiliated with Grinnell for 13 years, will be the resident manager for Grinnell.

Hugh Welshman, manager of the local company's industrial pipe division, is the co-sponsor for the job. He will be the home office official who will be responsible for the necessary co-ordination and management policy for the Portsmouth project.

Grinnell Corp. currently is working on the Electric Energy, Inc., steam plant at Joppa, Ill., which will supply part of the power for the AEC plant at Paducah.

If you are a graduate engineer, there may be an unusual opportunity for you with Grinnell Corporation at Portsmouth, Ohio.

Grinnell needs experienced piping and process equipment engineers.

For further information, write:
S. F. Mathes, Resident Mgr.
Grinnell Corporation
P. O. Box 268
Portsmouth, Ohio

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To many people, Grinnell is best known as a producer of high quality pipe fittings. But there are other reasons behind Grinnell's more than 100-year leadership in the piping field.

The Grinnell Industrial Piping Division has pioneered for years in the application of new piping materials, and in the development of new welding techniques, fabrication processes and practical shop and field procedures for piping in the power and process industries.

Grinnell is also America's #1 manufacturer of pipe hangers and supports, including constant supports for main steam lines operating at 1,050 F.

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Grinnell Thermolier Unit Heaters, Welding Fittings and its many other piping products have been well-known for many years.

Grinnell operates throughout the United States and Canada, with 8 manufacturing plants, 33 branch warehouses and a multitude of sales offices. It is a company with over 100 years of experience in the piping field behind it, with a tremendous present growth, and with an exciting future for engineers who become piping specialists with Grinnell.



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MECHANICAL ENGINEERING

(Concluded from page 442)

counterpart on the undergraduate level to sponsored research on the graduate level.

As a result of closer relations between the students and the staff, concurrently with developments in academic and professional directions, the Department has become a more closely knit organization, and as a consequence, certain joint projects of mutual interest are now well advanced in the planning stage and will be executed as soon as the necessary funds are available. One of these projects represents a memorial to the late Professor Edward F. Miller, '86, who for many years guided the destiny of the Department of Mechanical Engineering. This will take the form of a room established in his honor and suitable for small receptions, seminars, and similar functions. Another somewhat similar project involves the establishment of a Commons Room in the Department. This is to be the center of student-staff social relations and is to include certain recreational facilities, as well as the headquarters of the professional societies now affiliated with Course II. The Department Visiting Committee of 1952-1953 has kindly consented to sponsor both of these undertakings. The Department of Mechanical Engineering is making every possible effort to encourage and provide a well-rounded education through contacts both within and outside the classroom.

Conclusion

The need for technically trained personnel to discharge their professional responsibilities, not only as competent engineers or scientists, but also as well-rounded, cultured members of a highly complex society, is more urgent today than ever before. It is no longer possible to achieve the goal of adequate education by the outmoded methods of yesteryear, no matter how well such methods may have served the needs of our grandfathers or our fathers. Today, the education of the professional man must be closely integrated with life itself; it must draw its stimulation from all fields of human endeavor and be of the highest possible caliber. The professional man's education should also inspire him to expand beyond the restrictions of narrow, technical accomplishment and to make his contributions to society in the many ways by which he is especially qualified. This the Department of Mechanical Engineering aims to accomplish.

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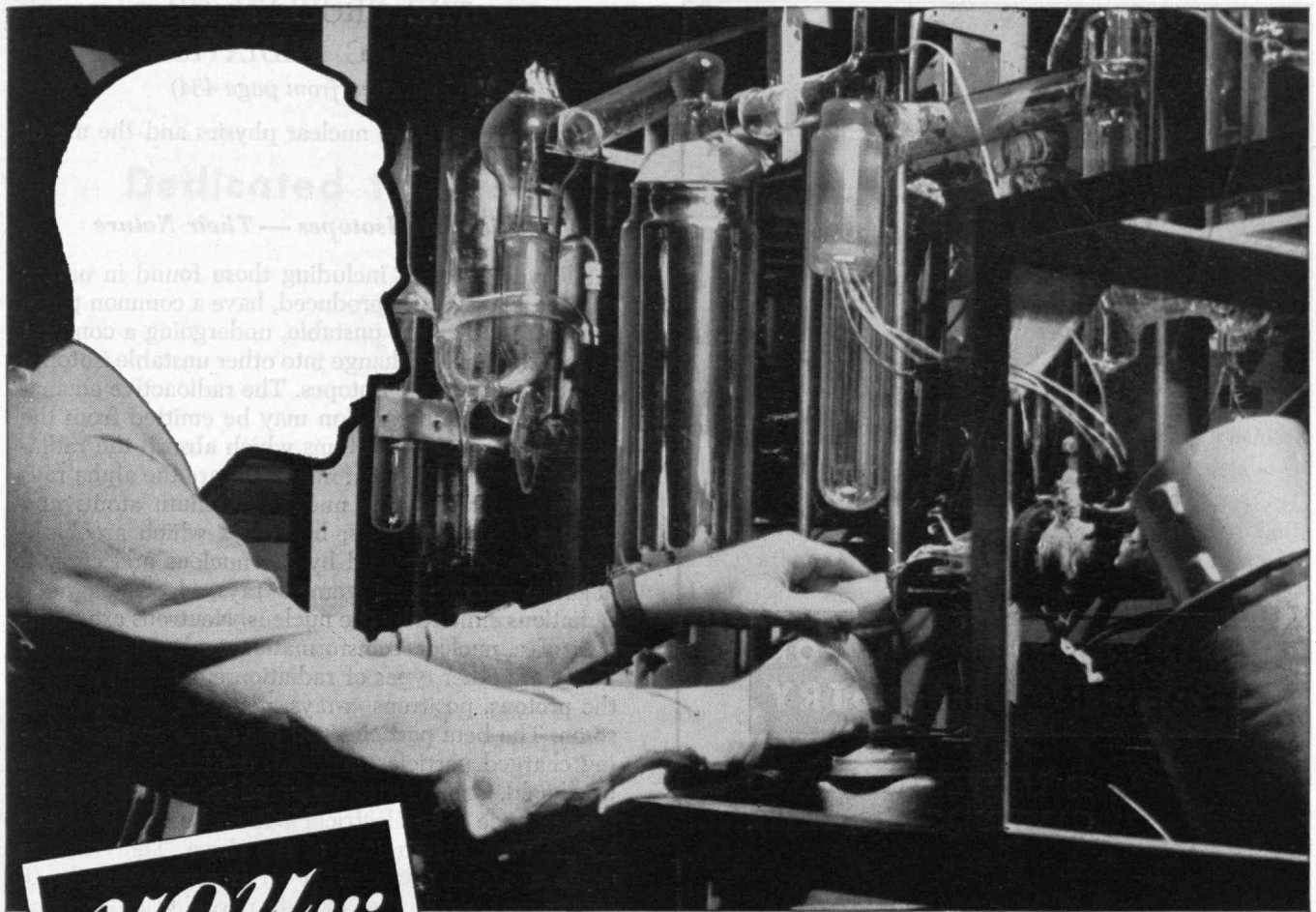
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THE PROBLEM OF IONIZING RADIATION

(Continued from page 434)

velopment of modern nuclear physics and the use of
radioactive isotopes.

Radioactive Isotopes — Their Nature

All radioisotopes, including those found in nature and those artificially produced, have a common property in that they are unstable, undergoing a constant disintegration and change into other unstable isotopes and finally to stable isotopes. The radioactive emanations due to disintegration may be emitted from the unstable atoms or by atoms which absorb the radiation. At present the most important are the alpha rays or particles which are nuclei of helium atoms and carry a positive charge; beta rays which are high-speed electrons emitted by the nucleus and carry a negative charge; and gamma rays, electromagnetic radiations emitted by the nucleus. Neutrons are products of a nuclear transformation and are unstable. There are other types of radiation emanated, namely the protons, positrons, x-rays, neutrons, mesons, and so on. The beta particles and the alpha particles, being charged particles, are both deflected in an electrical field. Gamma rays are found to be unaffected by the presence of an electrical field and are observed to be the most penetrating of the three. The effective range of alpha particles in air is approximately 10 centimeters, while that of beta particles and gamma rays is dependent upon the energy. Thus, these rays may travel several meters in air before attenuation. Normally the alpha particles cannot penetrate through the dead layer of the surface skin. The beta particles of 1,000,000 electron-volts maximum energy will be practically entirely absorbed in the first six millimeters of tissue. Gamma rays of the same energy may penetrate to a much greater depth.

Since radioactive materials have the ability to cause ionization directly or by means of secondary radiation, this property can be used for their detection and measurement. In this way gamma rays are similar to x-rays which also produce ionization by means of secondary radiation. Similarly, neutrons produce no ionization directly but they eject protons from material rich in hydrogen. The protons ionize the gas in proportion to the number of neutrons that produces them. The arbitrary unit of measurement, the roent-

(Continued on page 448)

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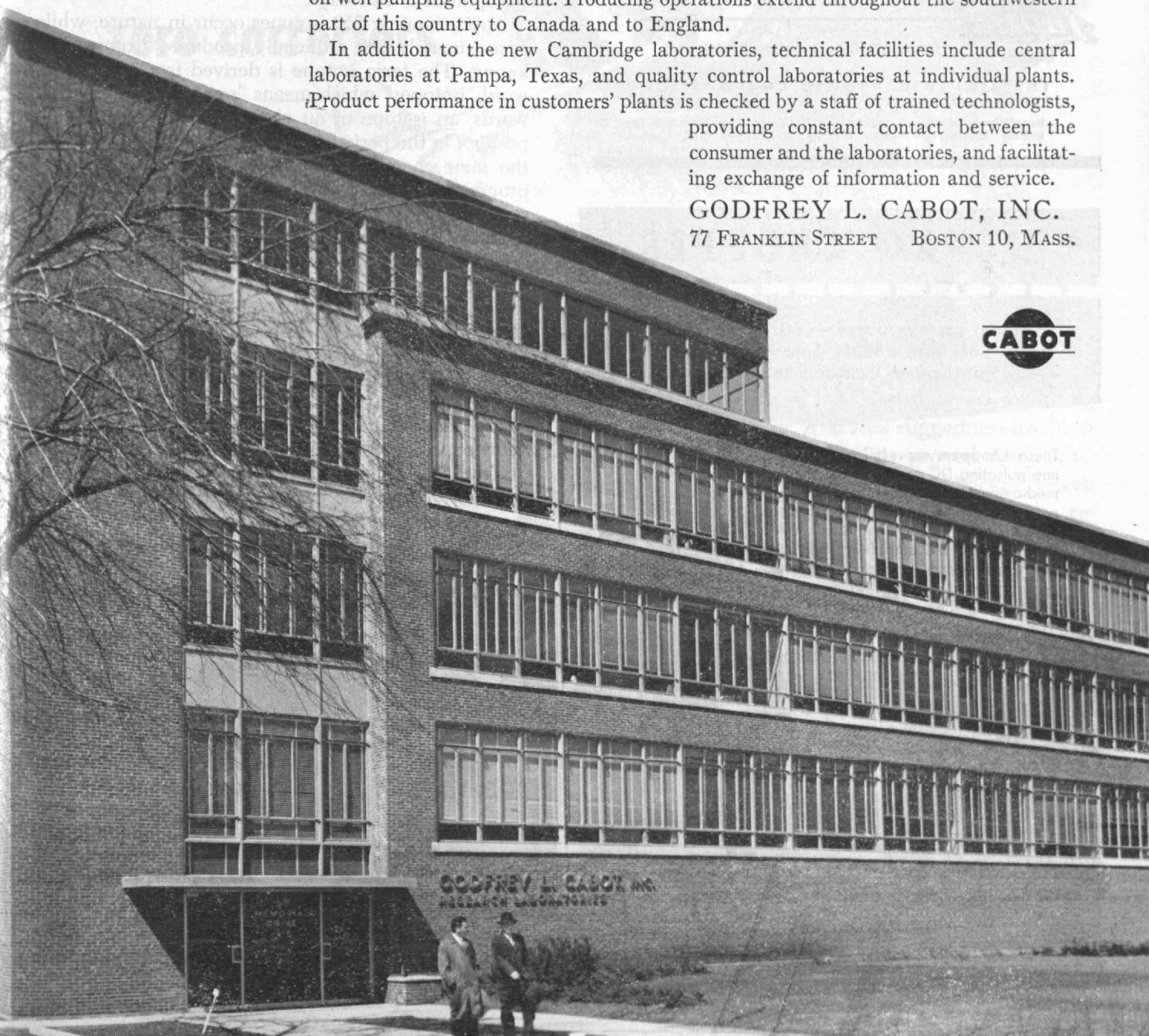
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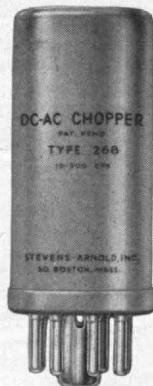
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THE PROBLEM OF IONIZING RADIATION

(Continued from page 446)

gen, is used to express the resulting ionization caused by the radioactive emanations. The activity of the radioactive material also may be expressed by the amount of disintegration the material undergoes in a given period of time.

Another arbitrary unit of measurement, named in honor of the Curies, is primarily used to express the intensity of the radiation based on the disintegration of its atoms, and may be applied to all radioactive materials to express the amount of disintegration. The unit, one curie, has been defined as that activity due to 37 billion disintegrations per second. Since the various radioactive substances disintegrate at different but definite rates, a convenient expression termed the "half life" is used to designate the time in which radioactive substances will disintegrate to 50 per cent of that which existed at any given time. For instance, the half life of radium is approximately 1,600 years. In 1,600 years, 50 per cent of the original amount of radium will remain. Likewise, the half life of radioactive phosphorus is 14.3 days.

Approximately 250 isotopes occur in nature, while approximately 800 artificially produced isotopes are known. The term isotope is derived from the Greek word "isotopos" which means "same place." In other words, an isotope of an element occupies the same position in the periodic table as the element, and has the same chemical properties but different physical property, namely, stability. These isotopes have the same atomic number as the element but a different mass number. The isotopes usually cannot be separated chemically, but some method which makes use of various physical properties is used. An example would be the separation of the isotopes by means of an electrical field or by diffusion.

Radioactive Isotopes — The Injury Experience

The first recorded injuries were due to lack of knowledge, improper handling, and misuse of the natural radioactive elements uranium, radium, and mesothorium. Most of the early cases reported, involving the use of these substances, consisted of blood changes and burns. There were several deaths, particularly among research workers. In 1923-1924, the first cases of a new type of radiation injury due to the use of

(Continued on page 450)



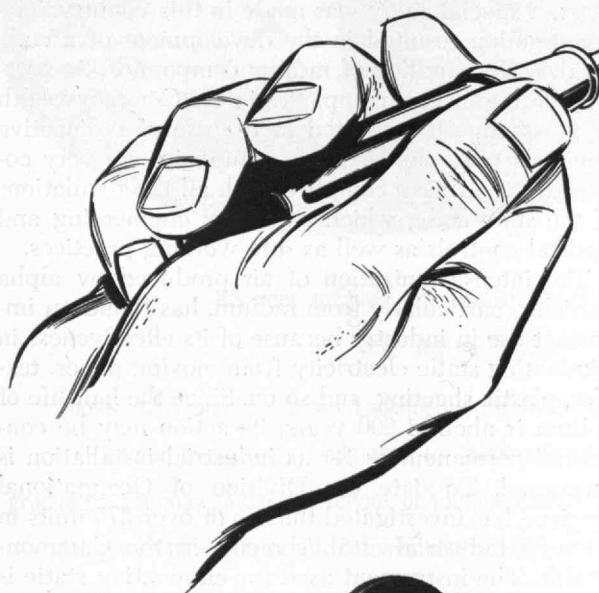
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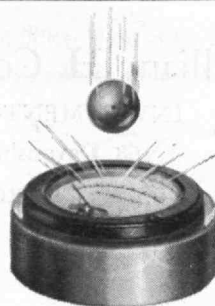
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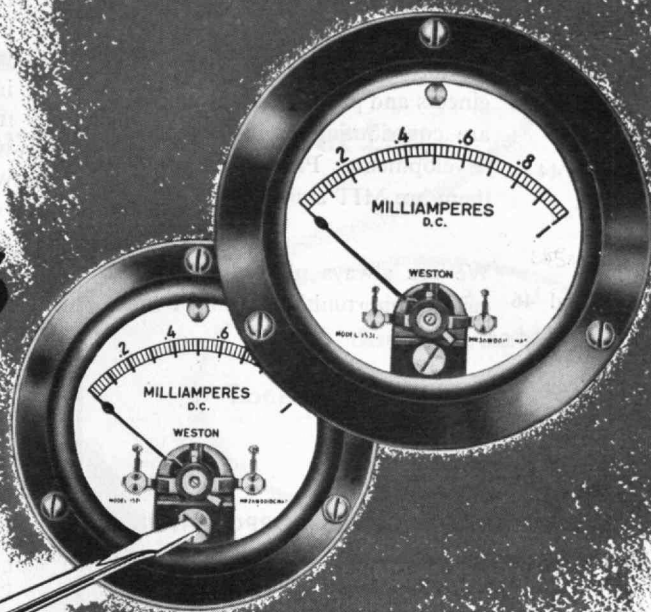
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THE PROBLEM OF IONIZING RADIATION

(Continued from page 448)

radium and mesothorium in luminous paint became known. This involved the destruction of the bones of the jaw, followed by suppuration which was at first thought to be the phossy-jaw injury seen among match workers. Most of those affected were women who had worked with the luminous paint while applying this paint to figures on watch, clock, and instrument dials by means of a camel's hair brush. The women habitually shaped and pointed the brushes with the lips and tongue. This unsafe working practice resulted in the ingestion of small quantities of the radioactive paint. In Europe, where a similar operation was carried on, a pointed stylus was used instead of the brush, and there were very few cases of radium poisoning since it was not necessary to shape the tip of the brush. Examination of the people affected showed that, in addition to the bone injury, there were blood changes and cancer growths. By 1934, death occurred to 23 of these women. The inventor of the painting formula used by the particular factory where these cases appeared, died of aplastic anemia. Due to the relatively high frequency of radium-poisoning cases, a special study was made in this country. The investigation resulted in the development of a code for the safe handling of radium compounds. At present, there are three companies in the Commonwealth of Massachusetts engaged in the use of radioactive luminous compounds. These companies are very co-operative and have complied with all the regulations of the state code, which stipulates engineering and medical controls as well as safe working practices.

The intense ionization of air produced by alpha particles, particularly from radium, has found an important use in industry because of its effectiveness in eliminating static electricity from moving paper, textiles, plastic sheeting, and so on. Since the half life of radium is about 1,600 years, its action may be considered permanent as far as industrial installation is concerned. To date the Division of Occupational Hygiene has investigated the use of over 275 units in some 85 industrial establishments in the Commonwealth. The instrument used for eliminating static is known as the Ionotron Static Eliminator and consists of a radium salt uniformly distributed throughout an extremely thin metallic foil (usually gold) welded to a heavy metallic nonradioactive backing. The metallic

(Continued on page 452)

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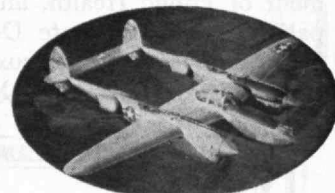
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THE PROBLEM OF IONIZING RADIATION

(Continued from page 450)

foil serves as a mechanical bonding medium for the radioactive material and also as a seal to prevent the escape of radon gas. The alpha radiation is emitted directionally, creating an ionized zone in the region of the electrostatic charge, so that it is conducted away from the material being processed. The effective range of alpha rays is less than three inches and, as previously stated, will not penetrate the skin to any great extent. However, the static eliminator produces radiations such as beta and gamma rays which may cause injury to an employee if precautions are not taken. The Massachusetts Division of Occupational Hygiene has an arrangement with the manufacturer of these units and is notified of any new installations in the Commonwealth. When notified, a survey is made by the Division to determine whether or not the potential hazard is satisfactorily controlled.

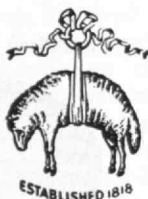
The use of the artificial radioisotopes has increased greatly in the past five years since their release by the Atomic Energy Commission. The Commonwealth of Massachusetts is the second largest user of radioisotopes in the country. At the request of the Atomic Energy Commission, a joint survey was conducted by the Division of Sanitary Engineering, State Department of Public Health, and the Division of Occupational Hygiene, State Department of Labor and Industries. There are approximately 40 users of radioisotopes in Massachusetts. Most of the users are hos-

pitals and educational institutions. There are very few industrial establishments using radioisotopes at present. A small amount of radioisotopes is produced by the cyclotrons at Harvard University and at M.I.T. A great amount of research is being done with radioisotopes, particularly in educational institutions and hospitals. Usually the amounts handled are tracer quantities and offer no serious hazards to those handling the materials. Some of the hospitals use larger quantities in therapeutic work. In industry one company in Massachusetts is the bulk receiver of various radioisotopes and subdivides the radioactive material received from Oak Ridge into desired quantities as specified by the purchasers. Occasionally a high intensity of Co^{60} is used as a reference source in the manufacture of various scientific instruments. Radium can be used for this job also but is much more expensive than the Co^{60} in the same intensity.

At least 95 per cent of the radioisotopes are handled in laboratories, only a few of which have been designed to handle high-intensity materials. Special safety programs and safeguards should be utilized, consisting of special hoods, remote handling devices, and suitable protective clothing, and so on.† Arrangements must be made for the proper disposal of the waste by storage, burial in the ground, or dumping at sea. In the future it is expected that many more industrial establishments will utilize radioisotopes in research, as reference sources and in the products

(Concluded on page 454)

† The safety program in force at M.I.T. is described by Harriet L. Hardy, "An M.I.T. Enterprise in Occupational Health," *The Technology Review*, 55:315 (April, 1953).



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THE PROBLEM OF IONIZING RADIATION

(Concluded from page 452)

manufactured. To date some plants have produced thickness gauges using radioactive sources, particularly those that emit beta rays.

Since the discovery of ionizing radiation some 50 years ago, the various ways to which this phenomenon has been put to use have resulted in not only great benefits to society, but have also brought with it injury and death. The unfortunate experiences of those who have suffered have served as a fountain of experience for the promulgation of controls necessary for the proper guidance of those who, in the future, may be exposed to this serious hazard. The injury experience can be reduced to a minimum, as was accomplished by the Atomic Energy Commission while engaged in the handling and use of materials emanating very high intensities of ionizing radiation.

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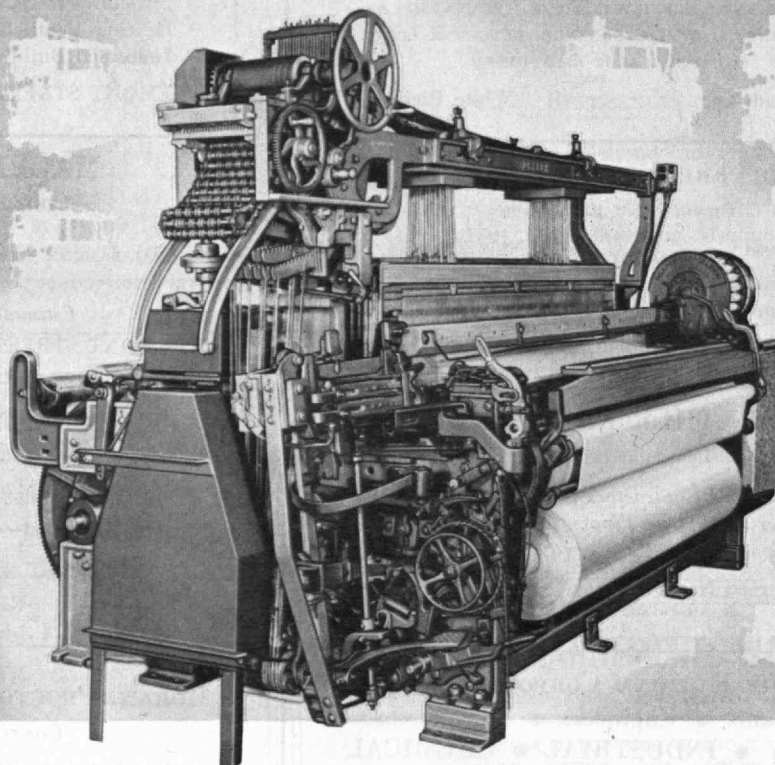
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Alumni AND Officers IN THE News

In the News Spotlight

WILLIAM J. LUTHER'84 was awarded a plaque by the Sturdy Memorial Hospital in recognition of long and faithful service. Until recently Mr. Luther was a member of the hospital board of managers.

SAMUEL CATE PRESCOTT'94 will be honored by the Institute of Food Technologists at a general assembly, June 21-25, and will receive the Institute's first Annual Citation for his scientific acumen and for his stalwart service in advancing food science. Dr. Prescott is being honored for his contributions toward founding and developing the Institute.

DR. JAY N. PIKE'01 received an award as "Dentist of the Year" at the annual meeting of the Minnesota State Dental Association in Minneapolis on February 24.

J. SPOTTS McDOWELL'16 is one of four engineer-executives to receive the annual Trinks Award for outstanding achievement in industrial heating. The presentation was made on May 5. Mr. McDowell was selected by the Award Committee for his leadership in developing modern refractory theory and practice to the benefit of the entire industry.

EGER W. MURPHREE'23, President of the Standard Oil Development Company, was presented with the Industrial Research Institute's 1953 Medal on April 14. The citation quoted Dr. Murphree's "skillful and inspiring leadership of an industrial group which made contributions of vital importance to our nation at war and peace and for [his] soundness of technical judgment and broadness of horizon which served well not only his organization but his country."

JOHN STACK'28 is the recipient of the Sylvanus Albert Reed Award "For his leadership in the design, development, and practical operation of transonic wind tunnels."

EMMETTE F. IZARD'29, Research Associate of the Du Pont Company's Film Department Research Laboratory, has been named recipient of the 23rd Annual Award of the Jacob F. Schoellkopf Medal of the Western New York Section of the American Chemical Society, for his outstanding contribution to industrial chemistry and "in recognition of his research on the chemistry of high molecular weight condensation polymers, and contributions to the development of a process for the production of polyester fibers and film."

JOHN R. PELLAM'40 and EMANUEL MAXWELL'48 have received the Department of Commerce silver medal for meritorious service. Dr. Maxwell received the award for "his outstanding contribution to science through the discovery of the isotope effect relating the transition temper-

ature of superconductors to the isotopic mass." Dr. Pellam received the award for his "outstanding contribution to science through experimental and theoretical investigations of the properties of liquid helium II."

On the Move

ELDRED E. BESSE'11 has been elected director and president of the Fairhaven Water Company.

ROBERT D. BONNEY'13 was appointed vice-president of manufacturing of the Congoleum-Nairn, Inc. He was also elected director of that company.

ALLEN ABRAMS'15, Vice-president of the Marathon Corporation, Rothschild, Wis., was elected president of the Industrial Research Institute, Inc., New York, in April.

CHARLES L. FOOTE'16 was elected president of the H. M. Sawyer and Sons Company, Lowell and Cambridge, and its coated fabrics division, the Brunsene Company, Watertown, Mass.

JOHN R. FREEMAN, JR.'16, was appointed vice-president of metallurgy and research of the American Brass Company.

EDWIN S. BURDELL'20, President of the Cooper Union for the Advancement of Science and Art, has been appointed a director and member of the executive committee of the Research Corporation, of which JOSEPH W. BARKER'16 is president.

ARTHUR E. RAYMOND'21, Vice-president of engineering, Douglas Aircraft Company, Inc., has been appointed a member of a new Defense Department committee on problems of defense against atomic attack.

SARGENT D. HEATH'24 recently was named vice-president of the Bell Company, a wool textile company.

MOORHEAD C. KENNEDY'25 has been elected president of the Goodwill Industries of New York, Inc., a non-profit welfare organization for the training and employment of the handicapped.

WILLIAM A. BROWN, JR.'31, President and General Manager of the Liquid Carbonic Corporation, was elected president of the International Acetylene Association on April 13.

THOMAS R. SMITH'32 has been elected vice-president in charge of research and development of the Maytag Company, Newton, Iowa.

WAYNE M. PIERCE, JR.'37, Manager of Operations at Norden Instruments, Inc., was appointed vice-president in charge of manufacturing, on March 4.

PAUL L. MORTON'38, Professor of Electrical Engineering, University of California, was appointed chairman of the Division of Electrical Engineering on April 1.

ALBERT M. STONE'38 was elected a member-at-large of the General Committee of the Philosophical Society of Washington in January.

HAROLD R. SEYKOTA'39, Products Sales Manager for Portland Gas and Coke Company, has been appointed an honorary secretary of M.I.T. He has also been appointed chairman of the Oregon section, educational council of M.I.T.

FRANK F. GILMORE'33 has been named to the rank of professor of management and ARMAN F. FREDERICKSON'33 to the rank of professor of geology, both on the Washington University faculty in St. Louis, Mo.

KENNETH M. LEGHORN'42, Executive Vice-president of Sun Tube Corporation, Hillside, N.J., was recently elected president of that company.

Obituary

ERNEST A. LESUEUR'90, March 28.
GEORGE H. ANDERSON'94, March 14.*
T. CLIVE DAVIES'94, November.*
GEORGE HAVEN'94, March 6.*
J. FOSTER WHITE'95, February 19.
ADELAIDE MOORS BROWN'97, January 16.
GEORGE R. DAVISON'98, July 12.
FRANK I. PECKHAM'98, March 2.
G. FRANKLIN ATKINS'99, January 24.*
HENRY P. JAMES'99, March 28.*
ROBERT L. KRUSE'03, February 5.*
GEORGE N. WHEAT'04, June 22, 1952.
GEORGE W. EVERETT'08, Fall, 1952.
JOSEPH MATTE, JR.'09, September 5.*
ALONZO L. MOSES'09, April 1.*
JOHN W. SHEA'09, June 2, 1950.
CHARLES P. SHILLABER'09, October 13.*
ROLAND K. ARMES'10, February 2.*
DONALD K. ARMES'11, February 8.*
FRANK H. CURTIS'12, March 6.
KENYON PRUYN'12, March 2.
ELLIOT W. TARR'12, March 27.
HARRY A. NORMAN'13, March 9.
JOSEPH V. WALSH'13, January 31, 1949.
WILLIAM S. CONNER'14, June 1, 1952.*
EDMUND KEY'14, December 4.*
KSHITISH C. BASU'15, date unknown.*
F. EUGENE PLACE'15, December 4.*
EDWIN P. HALE'16, February 11.*
ALBERT HOLMES'16, February 21.*
CONWAY B. BARBOUR'22, 1952.*
ROBERT A. SHARRER'22, August 4, 1950.*
MADELEINE M. MOQUEZ'23, December 10.*
EDWARD L. PATTON'25, July.*
HORACE M. BUSH'26, March 15.*
LLOYD M. LITTLEFIELD'26, March 16.*
HENRY S. CROSBY'29, March 19.
LOUIS GOLDMAN'30, March 4.
EUGENE J. CARR'51, May 13, 1952.
CLEVELAND L. NULL'51, October.
GEORGE E. DYCKE'52, August 3.

* Mentioned in class notes.

News FROM THE Clubs AND Classes

CLUB NOTES

M.I.T. Club of Belgium

The Club met on January 23 at a lunch in a restaurant in the lovely old Brussels Market. On that very day, the Chairman of the Club, Paul Heymans'23, was sailing on a business trip to the United States. He could not, therefore, participate in the gathering. At dessert we drank our wine to his health, hoping that he would transmit to M.I.T. authorities over there, and especially to Mr. Lobdell'17 the best greetings of the three dozen Belgian M.I.T. Alumni.

As this is probably the first note that the M.I.T. Club of Belgium has sent to *The Review*, the reader may be interested to know that our Club was created on the occasion of a trip to Belgium by President Killian'26, who was accompanied by Mr. Lobdell. As continental food and wine are apt to boost the spirit, we made a firm resolution to keep our meetings at regular intervals. We have done so once or twice a year, and it has always been a great pleasure for the older ones to receive fresh news from the younger ones about what is going on on the M.I.T. campus. At the same time, the young M.I.T. Alumni do sometimes like to meet those of us, who, because of their grey hair, can give good advice and leadership. — RENE M. STINGLHAMBER'37, 159 Rue Franz Merjay, Brussels, Belgium.

M.I.T. Club of Chicago

For our second plant trip of the season, the Chicago M.I.T. Alumni were invited to inspect the Hotpoint Company plant in a trip arranged on March 25 by Club President John Praetz'28, Bill Allen'34, and the other M.I.T. men at Hotpoint. The officers and directors of our Chicago group felt that too many good plant trips were being bypassed merely because they required daytime visits in order to see the production line in operation. Following the experimental line of approach, it was decided to hold one daytime visit to establish the membership response to such a schedule. It was gratifying to note that the turnout paralleled the response to similar tours held in the evenings and on Saturdays in recent seasons.

Perhaps the fine attendance to the Hotpoint Company trip was occasioned by the program which included talks by so many M.I.T. Alumni now with Hotpoint. Following a fine luncheon in the plant cafeteria and a tour through the "world's most modern electric cooking range manufacturing plant," we assembled in a lecture hall for a meeting presided over by Mr. Harold A. Strickland, Vice-president and Manager of Engineering. The subject of efficiency and engineering prog-

ress in Calrod electric cooking heating units was presented by Ben Vallorani'47, Heating Unit Engineer. Charlie Hughes'30 discussed the application of the Heat Pump to water heating for domestic purposes, showing and explaining an actual water heater using this system for which great future possibilities are being predicted.

Next Kendall Clark'31 presented and discussed the unique principle of drying clothes by the dehumidification of confined air using a cold water spray and explaining the many advantages of such a system. A complete history of the development of dishwasher and disposal appliances was presented by Tom Schwisher'22 who is manager of engineering for these two units. His talk was followed by Hotpoint's full dress show with which they merchandise these products to consumers. It is truly one of the high points of each of our Club visits to a plant to find such a large number of M.I.T. men running the show. In addition to Alumni already mentioned, we are thankful to Doug Illian'35, Harvin Au'46 and Art Weitzmann'50 for guiding groups on the plant tour.

We in the Chicago area are proud of the efforts of our club members in behalf of the Institute. When so much attention is being directed at recruiting prospective students of high caliber, it was good news to hear that Phil Coleman'23 had been appointed an Honorary Secretary of the Institute. Further news of importance is that President and Mrs. Killian will be the guests of honor at our next event the evening of April 29, at the Bismarck Hotel. ROBERT S. REEBIE'43, *Secretary*, Reebie Storage and Moving Company, Inc., 2325 North Clark Street, Chicago 14, Ill.

M.I.T. Club of Cincinnati

The Club held a stag dinner meeting on April 15 at the Queen City Club. Dean Pitre of M.I.T. presented a most entertaining talk concerning the many additions which have been made to the physical plant of the Institute since the end of World War II.

Officers for 1953-54 were elected and are: George F. Schatz'30, President, William P. Cadogan'41, Vice-president, Alexander C. Brown'25, Secretary, and Samson I. Crew'34, Treasurer.

Messrs. Chas. H. Urban'91, Fred Morrill'07, Henry Loring'07, Clarence Spiehler'08, Edward Kruckemeyer'11, Silas Champlin'13, John Raffety'22, F. W. Spalding'22, John Todd'23, Bob Schildknecht'30, John Breitenstein'40, Warren Francis'40, Sherman Crites'41, Sterling Bushnell, Jr.'46, H. W. Wyatt'47, Frank Iskra'48, St. John Bain'50, Summers Hagerman'49, Dirk deVries'50, Gerald Burns'51, and M. A. Rafi'52 were present.

The Club plans to publish shortly a directory of Alumni in the Cincinnati area. — ALEXANDER C. BROWN'25, *Secre-*

tary, Emery Industries, Inc., 4300 Carew Tower, Cincinnati, Ohio.

Indiana Association of the M.I.T.

Our March meeting, another Ladies' Night, was held at Rene's French Restaurant on U. S. 40, west of Indianapolis. We enjoyed one of their famous club steak dinners. There were twenty in attendance including Mr. and Mrs. Richard J. Hall'48 (newcomers to our meetings), Dr. and Mrs. Kent'49, with two guests, Tom Dorste'47, Mr. and Mrs. H. M. Oshry'35, Mr. and Mrs. James S. Sligar'41, Mr. and Mrs. Tom Harvey'28, Mr. and Mrs. Edgar B. Godley'26, Mr. and Mrs. H. S. Morse'03 and Mr. and Mrs. J. R. Ramsey'17. The Morses plan to attend his 50th reunion this June. Pardon me, Our genial President, Frank J. Travers'23, was also in attendance (Frank forgot to send a reservation card so my records do not show him present).

Our own Dr. Herbert Kent'49 was the speaker and he gave us a scholarly talk on poliomyelitis followed by a number of interesting sound movies on the subject. As an operator of a movie projector, he managed to trip the circuit breaker half a dozen times. The Secretary, in recognition of his Course VI, won the honor of dashing into the kitchen each time and closing the breaker.

As usual everyone had a good time. It is evident that the women and the men like these Ladies' Nights. — J. RAYMOND RAMSEY'17, *Secretary-Treasurer*, 511 Spruce Street, Plainfield, Ind.

M.I.T. Club of the Kanawha Valley

The annual spring dinner of the M.I.T. Club of the Kanawha Valley was held on April 16, 1953, in the Skycheffs Restaurant at Charleston's famed mountain-top airport. Attendance totaled 22 members and 17 ladies. Following the cocktail hour, but prior to the dinner, President Stuart J. Bugbee'27 got the boys away from the girls long enough to conduct the annual election of officers. The nominating committee consisting of Radcliffe G. Edmonds'34, Chairman, Joseph C. Jefferds, Jr.'40 and Benjamin T. Woodruff'36, who had things well organized, and in a few short minutes the ordeal was over. The following were elected: President, William L. Hawes'22; Vice-president, Thomas W. Bartram'21; Secretary-Treasurer, Donn W. Barber'42; and members-at-large, John D. Ryan'51 and Rush Taggart'49.

The feature of the evening was a review by Lenschen and Bill Hawes of their trip to the Fifth Annual M.I.T. Fiesta in Mexico. The Hawes not only described their travels and the wonderful hospitality extended by the Mexico City Alumni Club but explained some of the factors that are making M.I.T. a potent international influence for world understanding.

Secretary-Treasurer D. G. Hulett'42 briefly described the program of the Educational Council and explained how it was being handled in Charleston. To top off the evening Malcolm M. Anderson'42 screened the R.K.O. Pathé movie *Men of Science*.

Ralph L. Kelly'42 was in charge of dining arrangements and the following made up the telephone-reminder brigade: Donn W. Barber'42, Alexander S. Giltinan'47, Marshall C. Guthrie, Jr.'39, E. Huddleston Haynes'32, Robert S. Lovett'50, Max Means'48, and Arthur J. Power'42.

The following members attended the dinner: M. M. Anderson'42, D. W. Barber'42, T. W. Bartram'21, S. J. Bugbee'27, R. M. Durrett'29, R. C. Edmonds'34, C. H. Gilmour'31, A. S. Giltinan'47, R. Gorman, Jr.'33, W. L. Hawes'22, M. E. Hitchcock'37, C. F. Hobson'11, D. G. Hulett'42, J. C. Jefferts, Jr.'40, R. L. Kelly, Jr.'42, J. P. Leinroth, Jr.'48, M. F. Means'48, J. E. Meili'52, John D. Ryan'51, Rush Taggart'49, A. E. Winslow'44, and E. W. Wise'42. — DANIEL G. HULETT, '42, *Secretary-Treasurer*, 513 Macfair Drive, Forest Hills, Charleston 4, W. Va.

M.I.T. Club of Milwaukee

A very interesting and well attended meeting of the Club was held on March 26 at the Schlitz Brown Bottle. A fine film and lecture was presented by Mr. Kenneth Vaillancourt, Assistant Curator of Education at the Milwaukee Public Museum. The film was in color and described such interesting subjects as barracuda fishing, the industries of Florida, the Brahman herds, Cypress Gardens, Miami, and Key West. The R.K.O. Pathe sound picture, *Men of Science* was also shown. A fine buffet lunch and plenty of free beer were furnished by Schlitz. Over 50 members, their wives and guests were present. The members present included: W. B. Allen'41, J. B. Ballard'35, M. F. Biancardi'40, W. R. Bohlman'49, W. W. Bonns'99, F. E. Briber, Jr.'43, J. B. Cobb'37, F. R. Gruner'41, F. E. Hamilton'07, L. J. Healy'09, C. E. Hoerig'38, L. A. Hoffman'51, K. L. Holmes'51, H. W. Huston, Jr.'47, C. W. Jackson'49, A. E. Jakel'44, P. A. Koehring'49, W. A. Krampert'51, J. B. Kripke'40, M. M. Kuban'37, J. W. Martin'47, C. E. Meyer'36, J. C. Monday'51, Lieutenant V. C. Pfanku'51, G. W. Pollock'21, C. W. Rahn'34, Dr. L. D. Smith'05, C. L. Sollenberger 10-44.

Professor J. P. Den Hartog was the guest of the Club directors at lunch on April 1 at the University Club. Professor Den Hartog was in Milwaukee to lecture on "Vibration" under the auspices of the Milwaukee Section of the ASME.

The final meeting of the year, the annual picnic, will be held on June 13. Again the Club will be the guest of the Harold Koch's'22, Pewaukee Lake. — CHARLES L. SOLLENBERGER'44, *Secretary*, Research Laboratory, Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

M.I.T. Club of Monterrey

Not only was M.I.T. Club of Monterrey honored by the visit of Dr. and Mrs. Killian and Mr. Lobdell'17 on January 30, but the American Colony and a good

part of Monterrey City as well took part in their welcome. Dr. and Mrs. Killian and Mr. Lobdell were invited by the Board of Trustees of the Instituto Tecnológico de Monterrey to visit this institution in order to become better acquainted with it. They visited the campus of Tecnológico and the industrial zone of Monterrey, attended by members of the Board.

A dinner was held with all the representatives of the Tecnológico de Monterrey and all the members of M.I.T. Club present. Mrs. Killian was entertained by the wives of the trustees.

The Board gave a banquet at which Dr. Killian'26 and Mr. Lobdell were the honor guests. Mrs. Killian was presented with a beautiful hand-woven scarf made in Guadalajara, and Dr. Killian with a vase engraved with the seal of M.I.T. and an appropriate inscription. — ELIOT CAMARENA, 2-44, *Secretary*, Apdo. 118, Monterrey, N.L., México.

M.I.T. Club of Northern California

Our Club not only greeted Dean E. P. Brooks with our most cheerful weather of the year but with 21 cheerful faces of loyal Alumni. The occasion was an informal lunch at the New Delmonico Restaurant on Friday, March 27. President William O. Thompson introduced Dean Brooks who proceeded to wax enthusiastic over the founding and growth of the new School of Industrial Management. The solution of problems of an educational enterprise have not come readily to a man whose experience has been in private enterprise. However, it appears to us that a man of Dean Brooks's adaptability and good humor will not find them insurmountable. It looks to us like the new school has a good schoolmaster. The cheerful Alumni who were present were: W. L. Wetmore'02, E. Riley'09, Joseph Cox'23, Dr. M. Finley'24, Ira Beals'27, R. L. Cheney'27, C. S. Pope'27, J. H. Arnold'31, G. Langsdorf'32, Bert O. Summers'34, W. O. Thompson'35, R. E. Keyes'40, F. F. Noonan'40, C. E. Moffet'41, C. B. Steele'42, John Thacher'42, A. C. Saer'43, Marvin Campen'48, E. A. Hartsook'48, R. E. Brakeman'48, and Frank Ryder'34.

Although it was previously announced at a dinner meeting, the club dues are now \$2.00 per annum, which covers the cost of maintaining the addressograph and the stationery and postage costs involved in making announcement to local Alumni. As a reminder, the Club still meets informally on the mezzanine of the New Delmonico Restaurant every Tuesday at noon. Attendance has been from three to 12. Newcomers and old-timers are always welcome. — BERT O. SUMMERS'34, *Secretary*, 696 Pennsylvania Avenue, San Francisco, Calif. RAYMOND E. KEYES'40, *Review Secretary*, 1706 Jaynes Street, Berkeley 3, Calif.

M.I.T. Club of Northern New Jersey

Ladies' Night on April 8 was the occasion for a dinner meeting. Hotel Suburban, East Orange, served another memorable roast beef dinner, and the ladies took home favors of perfume graciously

provided by our speaker of the evening, William H. Dunney, Sr. "Perfumes and Cosmetics" had been selected as the evening's subject to please the ladies while at the same time appealing to the scientific appetites of M.I.T. men. No one was disappointed. Our speaker, known as the dean of American Perfumers for his more than 50 years in the perfume industry, with Ungerer and Company, New York City, took us all over the world gathering ingredients for perfume to please milady and, believe it or not, her gentlemen who, according to Mr. Dunney, consumes in his hair tonics, shave lotions, and so on, more perfume than the lady.

Cosmetics are known to go back to early Egyptian times, we were told; in Egyptian tombs have been found pigments for painting the lips and materials for darkening the eyes. Every perfume is international — 15 countries were represented in the vials given as favors at our meeting. The essential oils come from many lands and are still gathered in old-fashioned ways, such as ladanum extracted from leaves of a low-growing plant by having sheep tramp over the plant, picking up the pressed-out oils on their wool from which the oil is collected. Some flower essences are still extracted by scattering the flower petals over hot lye spread in frames. The oil from the flowers is transferred to the lye which is then percolated with alcohol to remove the oil from the lye and into the alcohol; then by distillation the oil is removed from the alcohol.

Although most of the essences come from flowers or plants the top "fixing" essences come from animals, musk from the musk ox of Tibet, civet from the civet cat, ambergris from whales. Synthetic oils have been developed and are now much used, World War II having given an impetus to this development when the flower essences of Europe were unavailable. Price advances too have stimulated this development; for example, in 50 years rose essences from Bulgarian roses, the most desired rose oil, have increased in price from \$5.00 to \$68.00 an ounce. This advance has given the perfumer, the man who blends the many varied oils to "design" a perfume, 1,500 ingredients to work with.

Perfuming can be likened to composing music, said Mr. Dunney, for it involves blending of many ingredients by trial and error until a pleasing effect is achieved. The job takes imagination and good memory, and it is tedious. You cannot get away from it either, for your clothing becomes permeated with it and you always carry your trademark. Mr. Dunney amusingly told how in riding a train or ferry boat he endeavors to sit or walk next to a woman so that other men will not notice the perfume fragrance which his clothes carry.

Cosmetics offer special problems. A lipstick must not only have color and fragrance but it must taste good. Creams must not discolor but must remain as white as the day the purchaser first opened the jar.

Some peculiar requests come to the perfumer, such as the lady who wanted a perfume "smelling like a damp cellar,"

a man who wanted a saddle leather or tobacco odor for after-shave lotion, another who wanted a perfume to make women say "I'm puzzled."

The evening was enjoyed by 61 members and guests. In deference to our guests, committee reports were omitted. Our next meeting on June 2 will be in Summit at the Hotel Suburban there and will feature an M.I.T. program with a speaker from Tech and prospective Tech freshmen from New Jersey as special guests. — RUSSELL P. WESTERHOFF'27, Secretary, 823 East 23rd Street, Paterson, N. J. JACK F. ANDREWS'33, Assistant Secretary, 209 Tuttle Parkway, Westfield, N. J.

M.I.T. Club of Southern California

Since the report of a month ago the Club has been host at a most interesting meeting of the local Alumni and six of the Deans of M.I.T. — Edward L. Cochran'20, Engineering; John E. Burchard, Humanities; Pietro Belluschi, Architecture; E. P. Brooks'17, Industrial Management; Harold L. Hazen'24, Graduate School; and E. Francis Bowditch, Students. The absence of our good President James R. Killian, Jr., '26, was greatly regretted but we plan a visit later in the year.

The occasion was the meeting of the Academic Council of M.I.T. with a similar group at Cal Tech with the intent of a more physical co-operation. A return visit will be made a year from now to Cambridge.

Around 200 of the Alumni enjoyed the evening greatly and gathered to visit with the guests long after the close of the program. At the head table were: Dean John E. Burchard'23, Mr. and Mrs. William L. Stewart'23, R. Nelson Smith'45, Dean and Mrs. E. Francis Bowditch, Mr. and Mrs. George M. Cunningham, Philip A. Herrick'24, Mr. and Mrs. William H. MacCallum'24, Admiral Edward L. Cochran'20, Dean Pietro Belluschi, Robert E. Hiller'31, James S. Cullison, Rockwell Hereford'24, Harold L. Hazen'24, Charles A. Fowler, and Dean E. P. Brooks'17.

President William H. MacCallum introduced the speakers. Dean Burchard led out with the theme that due to the high quality of the faculty at M.I.T. the students were exposed to a broad understanding almost approaching a liberal arts degree in addition to the technical knowledge of a high order.

Dean Brooks announced that the 1953 entering class would be larger and that this year the graduate students doubled last year and that there would be a similar increase this fall. This is exclusive of the Sloan plan which brought in 18 young executives this year. Two groups of 15 each are expected this fall. The newest and what will be probably the most popular course will be inaugurated this summer—a three-weeks course in "Management Controls." An early registration in this seems logical.

Dean Hazen stated that he was now in charge of 1,800 graduate students—their presence being largely due to the cash grants of various industrial concerns including some in this area. Dr. Hazen emphasized the value of these contribu-

tions of business men to research and still more to the strengthening of higher education of future leaders in the United States in an atmosphere free from transitory political control.

Perhaps the largest number of thought-provoking ideas were given the Alumni by Dean Belluschi who said that a successful architect gets to phoning and then to talking and travels too far away from actual contact with the physical materials which must be used.

Something new has been added to M.I.T. — a chapel is being planned in the new auditorium. A spiritual program is hard to formulate but it is a step forward. That side of Massachusetts Avenue will be changed along with the depression of the avenue, and will result in a paved parking area of about five acres and the removal of some smaller buildings. State funds have been voted for this highway improvement.

Anyone who has to look at many modern buildings is interested in Belluschi's idea that there has been too much exterior or functional design. We all know the human body has a skeleton but we really prefer one with some flesh on it. Color will be used more in exteriors. An architect must be a builder and acquainted with the materials he molds into an expression of the upward aim of the human spirit.

Dean Cochran said that the conference of the six M.I.T. deans at Cal Tech was "unique" although he hardly thought that the original derivation from the Latin was correct meaning "one horse." They discussed the possibility of a degree in "Engineering Science" and plan longer steps at the Cambridge meeting. Cochran mentioned the desirability of the selection of a good mate and complimented the Alumni on the 30 or more samples present. He said that M.I.T. graduates this year are much better equipped than those of 20 years ago and will be still better next year. Design is improving and engineers are getting away from the slogan "Cast iron is cheaper than brains."

Admiral Cochran led the singing of two rousing Tech songs and the meeting closed with President MacCallum'24 thanking Cal Tech for the opportunity to meet so many of the M.I.T. Faculty in one pleasant friendly association. HIRAM E. BEEBE'10, *Review Correspondent*, 1847 North Wilcox Avenue, Hollywood 28, Calif.

M.I.T. Club of Toledo

At the invitation of Colonel Randall J. Hogan'22, Commanding Officer, Rossford Arsenal, a group of 21 Alumni and guests met at the Arsenal for our spring meeting on April 7. After a delicious dinner in the Headquarters cafeteria, an election was held and J. D. Northrup'32 and A. G. Spieker'50 were elected president and secretary respectively for the coming year. Following this short business meeting, the new Technology film *Men of Science* was shown and received with marked enthusiasm. We all considered it an excellent production.

Following the film showing, Colonel Hogan had provided a bus and took us on a Cook's tour of the entire ordnance

depot. It was an extremely interesting and instructive visit. Among those present were: Alfred Abboud'22; Philip Anderson, son of George Anderson; Herbert A. Barnby'23; Stanley Davis'13; Raymond W. Drobisch'17; G. J. Grott'49; R. J. Hogan'22; Paul E. Keitel'40; B. Mathias'52; John D. Northrup'32; Frank J. O'Neil'21; Egidio A. Picardie'47; R. O. Spaulding'40; Adam G. Spieker, Jr., '50; Dan R. Test'50 and Charlton P. Whittier'27.

In addition to the above, Colonel Hogan had some M.I.T. Alumni among his service personnel in the depot. These included Privates O'Neil, Moon and Gassman'49. In addition to the foregoing, we were pleased to have Mr. Abboud's son, a lieutenant in the Marines and just returned from Korea, with us.

We regret that, due to absence in the city, Tom Hallenbeck'37, Secretary, could not be with us. — C. P. WHITTIER'27, President, Owens-Illinois Glass Company, Toledo, Ohio.

CLASS NOTES

• 1886 •

To the members of '86 M.I.T. and S.M.A., united under the banner of the M.I.T. Alumni Association, — Greetings. Since my last essay on the members of '86, which appeared in the April, 1953, issue making that issue an outstanding number of *The Review* I have had such an outpouring of response from the deceased members, and the living members having forgotten all about the fact that they belong to the notorious group who pulled the famous Harvard Law School Tug-of-War Team out of their boots. Thereby they earned everlasting acclaim, for which the Harvard Team never forgave them, but instead, whenever the opportunity offered — as it did frequently during the short period that the Team continued its feeble attempts to win back the lost glory (which they never did succeed in doing) — piled, or attempted to pile, derision upon their successful opponents. (This was not a nice thing for a group of wealthy magnates belonging to an older institution which fact should have made them all the more sensible of the place they occupied in the public eye, a place requiring all the more gentlemanly conduct. Without such conduct even the most fortunately situated institutions cannot long maintain their claimed superiority, which is sure to fall in time to some other institution. In this case, however, they failed to maintain their standing which said famous Tug-of-War Team of Harvard should have maintained because of their previously described eminence (as I have described)! Am I not right in my deductions? Thank you! I was sure that if I placed the facts in their logical sequence, relating the facts in a cool and dignified manner without exaggerating the facts or conditions, you would agree.

The said Secretary has heard from only one member of the Class since he

last asked for contributions, but this member enclosed \$10.00, making the Treasurer's balance, as of April 15, 1953, \$23.21. Since June 1, 1952, when I reported \$18.16 on hand, the Treasurer has received \$30.00 and paid out for expenses at Alumni Council meetings (details on request) \$24.95. When these notes are being read in the June issue, there will be only one more issue to feel responsible for, so that probably the balance available will be zero, or even less. If the editor turns this contribution down and does not think it suitable for so dignified a publication, then of course my '86 associates will not know my necessities. I shall then be forced to steal from the covered dish in the pantry, where my wife's store of household money provides sufficient greenbacks to supply the shortage of funds in the '86 treasury. Is this not evident? Of course, it is, or at least should be. If any of the Class, living or passed on, should wish to reach me, please contact the Taunton, Mass., Insane Asylum where I expect to be staying for my vacation until next 20th of July. — ARTHUR T. CHASE, *Secretary*, erstwhile residence Post Office Box 4, Island Creek, Mass.

• 1891 •

President Harry Young has, as usual, made arrangements for our 62nd Class Reunion at the Country Club, Clyde Street, Brookline, on Saturday, June 13. *Reserve the date.* Gather at the Country Club between 11:00 and 12:00 A.M. Dinner at 1:00 P.M.

Transportation will be provided from Boston and return, leaving the Algonquin Club, Commonwealth Avenue, at 10:30 A.M., on notice to the Secretary. Notices will be mailed to known addresses about June 1, just as a reminder. — FRANK W. HOWARD, *Secretary*, Bemis Associates, Inc., Watertown 72, Mass.

• 1894 •

In acknowledgment of a letter of sympathy, the Secretary has received a letter from Miss Elizabeth Davies, daughter of our English classmate, T. Clive Davies. Miss Davies wrote that her father had been extremely active until within a few weeks of his death, but had felt tired in late August, and had entered a hospital in October for a minor operation. This revealed a serious condition indicating that he could not long survive. Fortunately he had no pain and very little discomfort during the few weeks that he lived thereafter. Clive had made his routine bi-yearly visit to the Hawaiian Islands earlier in the year and had returned looking extremely well. On this trip he had visited with Sperry in San Francisco, as was customary, and they had had a most enjoyable reunion. Except for his wife's invalided condition, his last year would have been a very happy one. This is reported as Clive was popular and greatly respected by his classmates. A letter from Sperry bringing birthday greetings to the Secretary states that he is well, and that Mrs. Sperry has quite well recovered from her bad accident last year, but suffers somewhat from arthritis. It is hoped that this condition

is temporary and that she will soon be much improved in this respect.

A note from Norwin Bean, who had sent a clipping regarding the death of George Haven, stated that he had occasional contacts with Haven during the years of the latter's retirement from M.I.T., but during which he had often been called on as an expert in textile and engineering cases. Bean himself is apparently as active as ever as president of one of the large banks of Manchester, and one of the first citizens there.

Alan Claffin is well recovered from a recent stay in the hospital, and admits he has joined the ranks of the octogenarians early in April. Thus he is now in the group most of us are in. He has recently changed his office address and is now located at 113 State Street, Boston, instead of Broad Street. Alan and the Secretary are now the only survivors of the very companionable group of 11 chemists who graduated in '94.

Again it is a sad duty to report a further loss in our ranks. The following clipping from the Newburyport *Independent Republican* tells of the death of George Herbert Anderson on March 14. "George Herbert Anderson, 80, a long time resident of West Newbury, died Saturday in Stoneham at the home of his daughter with whom he had been making his home for the past year. He was born in Essex, the son of Daniel D. and Katherine (Burnham) Anderson, and lived for a number of years in Newburyport. While a resident of this city, he married the late Susan M. Coffin.

"A graduate of M.I.T. in 1894, through the Wheelwright fund, he was superintendent of blast furnaces at the Maryland Steel Company in Sparrows Points, Md., and held supervisory positions with the Baldwin Locomotive works, the Bethlehem Steel Company, the Pope Manufacturing Company, and the Mesta Machine Company.

"For many years he was treasurer of All Saints Church and a member of Laurel Grange, West Newbury. He leaves his daughter, Mrs. Howard Poore of Greenwood, Stoneham, and two grandchildren . . ." Anderson was a graduate in chemical engineering, and his death reduces the group of the 13 who composed the "baker's dozen" in that course to two survivors, Harold Chase of Danville, Va., and George Sherman of Akron, Ohio. "Andy," as he was familiarly known in student days, was a cheerful and most companionable classmate, but with a serious outlook on life. Unfortunately, after retiring to Newburyport and West Newbury he did not keep up the affiliations with the Class, and we never saw him at our five-year reunions, much to our regret. The sympathy of the Class is extended to his daughter and grandchildren. — SAMUEL C. PRESCOTT, *Secretary*, Room 5-213, M.I.T., Cambridge 39, Mass.

• 1895 •

William Everett Swift, Course I, passed away on February 28, 1953, at his home in Cornwall, Conn., where he was born. In 1924, after a long and exciting life as a civil engineer, he returned to Cornwall to take up his final residence. He

was educated at the Hartford Public High School and Amherst College and then came to Tech for his degree in 1895, as civil engineer. After leaving Tech he was occupied as both construction and consulting engineer in nearly every state of the Union, also in Puerto Rico and Santo Domingo. "Billy" Swift was a great traveler in the pursuit of his profession for he went to Greece, investigating the water supply for Athens, and the construction of an aqueduct to supplant the old Hadrian aqueduct. He had many interesting experiences during six years of frontier life in Nevada and Montana and in trips to the West Indies, Italy and Greece.

Swift was a life member of the American Society of Civil Engineers. He was responsible for the 42nd Street section of the New York City Subway, and in charge of a Special Study for the Construction of the Panama Canal. He supervised the location and construction of the first project under the U. S. Reclamation Service, the Truckee-Carson Irrigation Project in Nevada. Other professional work in the West included the design and construction of the Swift Dam, at Valier, Rockfall, Mont., at that time the highest dam in the world. He located the Hudson River crossing of the Catskill Viaduct for the water supply of the city of New York. During the Spanish War he was First Lieutenant Mass. Prov. Militia. He served during World War I in supervisory work with U. S. Government as chief engineer, Camp Merritt, N. J. (1917); Storage Warehouses Post, Newark (1918); Chief Engineer for contractors for Old Hickory Powder Plant, Nashville, Tenn., and Explosive Plant "C", Nitro, W. Va., including supervision of the laying of 60 miles of pipe for water works in Nitro. He was a member of the First Church of Christ, Cornwall, and rendered very active civic services including the Board of Education of the Housatonic Valley Regional High School; Board of Finance of the town of Cornwall; and Chr. Building Committee of the Cornwall Consolidated School. For many years he was a member of the Litchfield County University Club. Mr. Swift leaves a wife, two daughters, one son, and five grandchildren.

Joseph Foster White passed away on February 19, 1953, at the Hotel Vendome, Boston. He was with the Class during 1892-93, in Course V. During the past years we heard little from him, for in 1925 his class affiliation was cancelled. He originally lived in Brookline and in 1941 he transferred to Longwood Towers. In 1947 we learned he was permanently incapacitated. During 1940 he transferred to Hotel Vendome in Boston where he passed away.

Dr. Joseph E. Walworth has returned from Florida to his home in Andover, Mass. You will find Robert W. Carr still in San Antonio 2, Texas, but on Route #13, P.O.B. 580. A characteristically buoyant letter was received from our "Billy" — Professor William T. Hall of Rochester, Mass. He may have changed some in the past years, but never changed in spirit. He has "sung more solos than ever before and last Palm Sunday sang the *Palm*

Branches." He still sings in male quartets, acts in shows, and has preached in several Congregational Churches. His last sermon was in March, 1953. He is the elected head of Laymen of over 40 churches, and is the regular attendant at the Laymen's Council of all Massachusetts churches. Last year he built a large barn on his estate and now sports four riding ponies in connection with his daughter's summer camp. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

• 1896 •

Greetings! And welcome home to the travelers who have returned from far away places, and "Bon Voyage" for vacations now being planned for the coming vacation months. The local contingent as of this writing are carrying on as usual. Excerpts from various letters keep us abreast of individual activities. From Marshall Leighton, Washington, D. C., your Secretary received the following letter:

"From various remarks printed in The Review for March and April, I am able to infer that you have had a very wonderful 80th birthday party, and that a large group of your friends presented you with a memorial on which their names were engraved.

"That was a mighty nice thing to do, and the doing of it reflects the intelligence and the fine discriminating taste of the participants. It was a God-given privilege to be allowed to participate.

"That which I wish to say is that I would have been most glad and proud had I been included among those who gave you their hearts' best wishes. It is only natural that I should have been excluded from that company because I am so far away and so inconspicuous. Therefore, let me now tell you of my esteem and sincere regard and congratulate you on the event."

From Elbridge C. Jacobs, 146 Williams Street, Burlington, Vermont, came the following:

"Dear Rockwell and Damon: I have noted with deep regret the paucity of the '96 news in The Review and the passing of so many of the old fellows: latest, Joe Stickney.

"I'm sorry that I have not helped more in the matter of class news; occasionally, over the years, I have sent you notes on Mrs. Jacobs' and my global wanderings but nothing that you could call "newsy." Here is my rather immodest attempt.

"I, too, have passed into the 80-year class, never felt better in my life. After 45 years of teaching chemistry, mineralogy, geology, I retired in 1944, but, unlike the majority of the emeriti, I faced no problem of how to kill time; for, years ago, I established a seismograph station here at the University largely obtained with federal funds which George Burgess (VIII,'96), then superintendent of the Bureau of Standards, helped me to get. This was way back in 1932 or 1933 and I have recorded and sent to the Bureau of Coast and Geodetic Survey very many 'quakes. My third, and last, instrument arrived only a few months ago and is still in the experi-

mental stage — a seismograph is a sobering remedy for boredom. And so, 'rickerty ix' and long live '96."

We wish to congratulate any who have attained the dignified four-score group. There is a note of caution injected here as to excessive or unaccustomed work.

We received a letter of appreciation from Mrs. Daniel Bates. Also a clipping from the *Wilmington Journal* as follows:

"As age is reckoned, Daniel M. Bates was an old man when he died at nearly 77. But he never got old in the ken of most of us who knew him or watched him in action. He more than measured up to the old-time standards of probity and responsibility which still, fortunately, are recognized and admired here today. In every salient way he did his duty as he clearly saw it. He went on from there to do more.

"Here was a man, for instance, who regarded military service as a duty taking precedence for him over all other duties. Thus he wore the Army uniform in the first World War, in his forties, and again in World War II when he was nearly 70 — teaching mathematics to young soldiers at the University of Delaware. . . .

"Colonel Bates' native Delaware knew him well during two widely separated periods of his life — first when he was making a brilliant start in the textile business in Wilmington, and second when he came back to live in rural semi-retirement. Retirement from the enjoyment of life, however, was impossible. And back in Delaware he found some deep satisfactions. He conceived and largely financed a plan for New Castle's pride in its early American architectural character. The philosophy of Historic New Castle, Inc., is having a profound influence on that ancient colonial capital and is bound to keep on doing so.

"With Colonel Bates the historic sense was something strong that permeated his active entire life. In all modesty, simplicity, and self-confidence — plus humor — he has made his indelible mark on his state's history and on the hearts of countless Delawareans."

We received another letter from Elbridge Jacobs: "After half a century (and more) of our acquaintance, I think the amenities would not be strained if we reverted to first names! Right? In your letter you ask about Moat; I saw him on the street the other day, and he was looking well; had recently returned from Florida, where, since his retirement, he has usually spent the winter months. We regret not being there right now, for we had snow last night and this morning and the landscape is decidedly wintry.

"I noted in the last Review the passing of Eddie Mansfield. I am not at all surprised for he looked far from well the last time I saw him. He was a good old scout. So many of our Class have slipped away that I hardly know who are left: would it be much of a job to put out a necrology list? I did not know that Dan Bates had died. Best wishes to you and Damon." — JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge, Mass. FREDERICK W. DAMON, *Assistant Secretary*, Commander Hotel, Cambridge, Mass.

Your Secretary was greatly pleased to receive during March letters from two classmates, Than Howard and Tom Weymouth, and these letters are here reproduced. Than Howard writes: "Have been meaning to write you for some time past but my mind has not been up to it. My wife's illness and throat operation have kept my mind on other things. Then we all decided that we were too old to live alone any more so we moved across the lawn to Edwin's home where we are now living. We have rented our own house partly furnished, and getting the accumulation of 55 years out and over to Ted's was some job. However, it is done, the old home is rented, and we are making our home with Ted and his wife. Mrs. Howard is very much better and we are very comfortable. My own health is very good for a young fellow of my age (78 last September). Wish I could see some of the old bunch again. Tom Weymouth was in to have lunch with us last summer and I hope to see him again this year. I wrote him a couple of weeks ago but have so far no answer. Also wrote Harry Worcester, Ned Olin and Proctor Dougherty. Edwin and his wife are well. He has three children, two girls and a boy. The girls are married and Jean has a son a little over three years old. His son, the youngest of the three, is in the Army, where he has been a year and a half and weighs about 40 pounds more than his grandfather. . . . My best to you and any of the old bunch you may happen to see. Write me personally when you feel like it. As ever, Than."

Tom Weymouth writes: "This letter should have been dated and sent to you last August for it was then that I made a trip from my summer home on Chautauqua Lake in western New York State to Youngstown, N. Y., about 100 miles away to spend the day with Than Howard and his wife, Flo. I had not seen him for many years and am pleased to report that he is still young and vigorous with the same spirit he had when we were young squirts in Boston. Since my visit with him I have received a letter written in February telling me that after having spent most of the winter in a hospital, his wife is making a rapid recovery and seems to be better than she has been for a long time. Than has a son Edwin, who, with his charming wife, Virginia, and grandchildren, Gene and Billy, have provided Than with the distinction of having a couple of great-grandchildren to keep the old man on his toes. The member of the Class whom I see most frequently is George Wadleigh, whom, with his delightful wife, Eleanor, we expect to welcome into our home in a few days to help us celebrate the anniversary of the day that inflicted me upon the world and the Class of '97. Harry Worcester telephoned the other day when he happened to be in New York but I was out at the time and missed hearing his voice. My wife, Jo, however had a chat with him and hugely enjoyed the visit, as she does with any and all of my old friends of M.I.T. whenever she gets the chance. In fact she

seems, strangely enough, to harbor the notion that they are a bunch of mighty fine chaps. George Wadleigh and I attended a meeting of the M.I.T. Club on the 25th of February and ran across Frank Shepard, who seemed to be in good shape except for some lameness due to arthritis, — a malady which I am successfully keeping under perfect control with Cortisone after having been a guinea pig in the early days of the development of the technique of the drug. In order to maintain a keen interest in life since my retirement from active business 12 years ago I have taken up sculpture and painting, doing landscapes at the Lake in the summer time and portraits in New York in the winter. I am also keeping my hand in technology by taking on some selected consulting work in my old field of natural gas engineering and find it most stimulating to review the study of thermodynamics involved in that work which we all loved so much under Peabody (?) over half a century ago. Another of the old gang whom I see almost every summer is Charlie Dunn, who still lives in our old home town of Lock Haven, Pa., which is on the prettiest route from Bemus Point, N. Y., to New York City, over which I drive two or three times a year. Charlie is an associate judge of the court there and fits into that role with great dignity, as one would expect from one who had his early training as a ballet dancer in the French plays at M.I.T. around the year 1895. . . My best regards to you, John. I would greatly enjoy hearing from you one of these days. Tom." Bill Cunningham, the well-known columnist of the Boston *Herald*, wrote several articles recently relative to the life achievements and the passing of the famous Indian athlete, Jim Thorpe. In Bill's column of April 11 was the following paragraph which we take the liberty of quoting. "Also I referred here the other day to a Captain Pratt of the Indian Wars as the pioneer of Indian education leading on to Carlisle. I said today, he's forgotten. Well, he isn't. It develops that his daughter, Mrs. Edgar M. Hawkins, resides at 14 Stoddard Road, Hingham, that he went on to become General Pratt, was the founder, and, for 24 years, the superintendent, of Carlisle, with 4,903 Indian students in his charge. I gather Mrs. Hawkins grew up there. What a story she must be able to tell!" Mrs. Hawkins referred to in the above is the wife of our genial classmate, Edgar M. Hawkins. The class of '97 is pleased to extend to Mrs. Hawkins its sincere congratulations on the wonderful work of her father, General Pratt, in establishing and carrying on successfully for so long a time the Carlisle Indian School. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

• 1898 •

Last call for the 55th. You have already heard from Lester with outline of proposed plans. They are coming from the West, East, South and North; not so many as at the historic Golden Anniversary, but a goodly number. At the present writing, April 14, approximately 70, including classmates, wives, and relatives,

have indicated their intention of coming. Reunion headquarters, — Hotel Vendome, Commonwealth Avenue, Boston. After Alumni Day on June 15, the '98 Special Reunion will start. Tuesday, June 16, we shall be the guests of Roger Babson at Wellesley. Wednesday, June 17, George Cottle has arranged for a day at the Country Club. We shall be transported in private cars of classmates to Wellesley and also to the Country Club. All the functions of the Special Reunion will be in the daytime; evenings will be free for rest, visiting, or entertainment, as you may wish.

If you are hesitant about coming for reasons of health, consult your own common sense and your physician. Perhaps you could enjoy to advantage part of the Reunion and contribute your bit to a memorable occasion. If you propose to come but have neglected to send in your acceptance, there is still time if you will write promptly. Write to George Cottle for reservations, care of Hotel Vendome. — EDWARD S. CHAPIN, *Secretary*, 463 Commercial Street, Boston 13, Mass. ELLIOT R. BARKER, *Assistant Secretary*, 20 Lombard Road., Arlington, Mass.

• 1899 •

Kenneth M. Blake, II, when I went to see him shortly after graduation, was working at the Stanley Brothers' plant in Newton, Mass., helping to put together a Stanley steam automobile. The Stanley brothers (twins) Frank and Freeland, originally in the photographic plate business, had gone into this new and fascinating field. It turned out that Ken was actually on the payroll of the Locomobile Company, which at that time was in negotiation with the Stanley Company. The Locomobile Company did not change from steam to gasoline as the motive power until about four years later. In December, 1899, Ken was sent to the Paris, France, agency of the Locomobile Company and spent most of the next four years in various parts of Europe. In Austria, he met members of the royal family, as he did next in Saint Petersburg, Russia. Next he was sent to Berlin and Hamburg, where he delivered a car to Prince Henry of Prussia, the Kaiser's brother. Others he came in contact with were King Leopold of Belgium and the Shah of Persia.

After this hob-nobbing with royalty, Ken came back to this country in 1904, and traveled all over the United States before settling down as manager of the New England branch of the Locomobile Company in Boston. He remained there until 1913, when he went to New York City to join the Mack Truck Company, and stayed with them until 1933. Ken had married a Miss Wilder of Charlotte, N.C., and erected a nine-story business block on Wilder property in the heart of that city. He says he is "practically" retired now, but manages to keep pretty busy. He lives at 390 West End Avenue, New York City.

In February class notes, I told of my visit with Henry P. James, who had gone to live with his sister in Summit, N.J. I am very glad I made the visit when I did for at that time Henry looked well and happy, and we certainly enjoyed talking

over old times together after a period of 50-odd years. He happened to mention the fact that many of his forbears had lived to the later eighties or early nineties, so he felt he could look forward to at least 10 or 15 years more of life. On March 30 I received a letter from his sister, Mrs. Roderick Macdonald, dated March 28, notifying me of Henry's death on that date. With his sister's letter was a posthumous letter from him, dated February 3, calmly describing his condition and prophesying the probable time of his death. He requested his sister not to send the letter until after he had passed on.

After graduating from M.I.T., Henry went with the Bryant Electric Company of Stamford, Conn., and later with the Cutler Hammer Company of Milwaukee. Shortly after that the Employers' Mutual Insurance Company was founded and Henry eventually went with them. His engineering training and his exactitude in every detail made him a valuable aid in the development of the concern and resulted in his becoming their chief underwriter.

George Frank Atkins whose death was announced in the May issue of *The Review* spent his first year after graduation at the Rose Polytechnic Institute at Terre Haute, Ind. Then he went into the family business of saw manufacturing and at the time of his death was senior member of the E. C. Atkins Saw Company. He was an active member of the M.I.T. Club of Indiana. Frank was also a member of the Nature Study Club of Indianapolis. His particular hobbies were the study of flowers and birds.

Burt R. Rickards of Albany, N.Y., has been elected vice-president of the Senior Citizens Center, an affiliate of the Council of Community Services. The Center studies problems of the aged, develops talents and hobbies of its members and provides educational and recreative facilities.

The address of Samuel B. Robertson is now 1320 Virginia Episcopal School Road, Lynchburg, Va. — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. MILES S. RICHMOND, *Assistant Secretary*, 201 Devonshire Street, Boston, Mass.

• 1900 •

Last call for our reunion at The Pines, Cotuit, Mass., June 16 to 18. If you find that you can come and you have not made any arrangements, come along just the same. There will be plenty of room and advance notice is not necessary.

H. G. Hooper, Course XIII, writes from Brooklyn that an illness is keeping him confined so that he will not be able to attend the reunion.

The following was released in Mechanical Engineering on March 23. "Thomas D. Perry, long active in the Wood Industries Division of the ASME, attended the dedication of the Hardwoods Exhibit at the Museum of Science and Industry, in Chicago, on March 19, 1953. He was the chief consultant to the staff of the Museum in developing the graphic tests which demonstrate the useful qualities of plywood and adhesives. This institution, under the Rosenwald Foundation, has outlived the idea that a museum has as its major objective the preservation of the

historic items of the past, and, instead, presents only 'activated' exhibits that demonstrate the values of products and processes for today and tomorrow. The exhibit starts with the tree, in which the growth processes are shown by lights, continues through miniature models of all conversion processes, sawing logs, cutting veneer, gluing plywood, and so on, and concludes with full size showings of furniture, musical instruments, sports equipment, and so on, which contribute to human comfort and recreation. There are many exhibits, where a push button, by a visitor, activates a dramatic demonstration of the qualities and uses of plywood and adhesives. This exhibit was underwritten by all segments of the hardwood industry at a cost of over \$350,000 and is modernly displayed with the aid of sound movies, colors and lights. Last year these museum exhibits, in many industries, accommodated over two million visitors." — **ELBERT G. ALLEN, Secretary**, 11 Richfield Road, West Newton 65, Mass.

• 1901 •

I have much material to draw from in the replies to the class letter and some of it will have to go over until next fall. I will try to report first on those from whom we have not recently heard.

Bill Holford from Portland, Ore., sends me a long clipping about himself from which I will quote presently. He says "I've not retired. I am also a member of the Portland City Planning Commission. Al Higgins may be interested to learn that Portland area, Council of Boy Scouts, has a membership of cubs, scouts and explorers of about 22,000." The following is taken from Bill's clipping: "When the Oregon Building Congress recently elected William Gordon Holford their new president they not only put in a man who knows the building game, but one who is a charter member of their association." He was born in New Haven, Conn., but when he was 10 years old the family moved to Hazardville, Conn. Bill's first schooling was at Wesleyan Academy and from there he went to M.I.T. One of his classmates was Ellis Lawrence, later Dean of Architecture at the University of Oregon. Lawrence was sent out to San Francisco to establish an office for Steven Codman, a prominent Boston architect, but about the time that Ellis Lawrence landed in Portland, San Francisco was hit by fire and earthquake. So it was that Oregon acquired a top flight architect and later the University a top flight architectural school.

When Bill Holford graduated from M.I.T. he went to work in a quarry as a draughtsman doing pattern work and stone cutting design. After one year of quarry work he became associated with Guy Lowell and shortly thereafter went to New York to establish an office for architect Lowell. While there Bill did work for many prominent New Yorkers. Later he joined forces with Henry Hornbostel, an internationally known architect, who completed such projects as Carnegie Tech and Soldiers Memorial in Pittsburgh. Architect Ellis Lawrence induced Bill to come to Portland and during the Seattle-Yukon exposition in Seattle he decided to take in the exposition and visit with his

old classmate Lawrence in Portland. In 1908 he married Florence Fowler of Brooklyn. Lawrence did a good selling job on Oregon, for in 1911 the Holfords moved to Portland, and the firm of Lawrence and Holford was established. Among the projects completed by this firm were the first two units of the University of Oregon Medical School. Much residential work was also done. Later the firm became Lawrence, Holford, Allen and Bean. After a while Bean withdrew and Bill took time out to become supervising architect for F.H.A. for Oregon. In 1942 he returned to his firm but it soon broke up. Allen went into the Army and Lawrence confined most of his time to teaching at Oregon. So it has been William G. Holford, architect for the last 10 years.

A son, William G. Holford, Jr., is a doctor and there are two daughters and two grandsons. Bill has been associated with the Boy Scouts for the past 27 years. He has held the Boy Scout "Silver Beaver" honorary award for some time. In 1937 he took his troop to the Boy Scout Jamboree in Washington, D. C., then to England and Holland where the International Jamboree was held. Today he is an honorary vice-president of the Portland Area Council of the Boy Scouts of America, is on the camping committee, on the executive board, belongs to the Order of the Arrow (Boy Scout organization) and recently designed the new building for Camp Merriweather. He is also a member of the Lange Syne Society and the Oregon Society of Artists.

I am glad to report news from William Arsem, V, who lives in Maryland. He has not retired. He says: "Present occupation, consulting chemical engineer. Am spending most of my time as consultant to the office of Naval Research in the Material Sciences Division. I am aiding in organizing and coordinating the Program of Basic Research in Extractive Metallurgy of Titanium." Winthrop St. Clair is another one who has not retired. He reports: "Am still with the office (Sturgis Associates, Inc., Architects) with which I have been since 1905. Have been president of the corporation for 12 years. We have been so busy I have not retired yet, although I almost did five years ago, to my home which is still waiting for me in Miami, Fla., which has been my legal residence."

I quote from the reply of Angus MacInnes, I, whose home is in Port Washington, Long Island. "Retired and living with my wife in Cape Cod type house with both flower and vegetable gardens with which I enjoy experimenting. Have successfully grown cotton, probably the first on Long Island. Interested in small boat sailing, being an officer of Interscholastic Yacht Racing Association. Woodworking as a hobby during the winter." Francis Cady, VI, in Cleveland, Ohio, says that he has retired but keeps himself occupied by selling supplies to auto sales rooms, filling stations and so on.

I am still looking for more class replies. You know my address. — **THEODORE H. TAFT, Secretary**, Box 124, East Jaffrey, N. H. **WILLARD W. DOW, Assistant Secretary**, 287 Oakland Street, Wellesley Hills 82, Mass.

• 1902 •

A press clipping from the *Oregon Journal* of March 22 reports that, at the inauguration of the new president of Reed College, the former Professor Ballantine of M.I.T., the honorary degree of doctor of laws was conferred upon our classmate MacNaughton. At the same time Mrs. MacNaughton received a similar degree for her "wise counsel and work in public education." MacNaughton had been temporary president of Reed until last August when President Ballantine took over informally. The Class is proud of the new honor conferred on one of its members.

Dan Patch has recently returned from a visit to his Friendship, Maine, summer home and reports that he called in on Robinson at Brunswick and found him in good health and as busy as ever. Arthur Hall has returned to Chocorua to start his farming operations and invites any of the Class passing through on trips to the mountains to look in upon him as he is on the main route.

It is hoped that a goodly number of the Class around Boston are making plans to attend the Alumni Day luncheon and banquet. It's a good way to keep in touch with one another, and we are often favored with a surprise visit from a distant member. — **BURTON G. PHILBRICK, Secretary**, 246 Stuart Street, Boston, Mass.

• 1903 •

The most important work of your Secretaries at present, April 20, is in getting ready for the 50th Reunion; there are so many details to work out, and we are just hoping that they have been settled to the satisfaction of all of you. When you read this, some of you may be on your way here; we are hoping for the largest attendance since 1903. It has been good to hear from many of the Class — the first time in 50 years from many of you. Some letters will merit a personal reply, and we shall get to those in due time. Sorry to record the death of Robert L. Kruse, X, in Milford, Ohio, on February 5, 1953.

Andrey A. Potter, after serving Purdue University as dean of Engineering since 1920, is to retire in June. *Campus Copy*, has this to say of him, among other things, "Dean Potter says that his main interest in life has been people; that he liked all kinds and ages; and has never held a prejudice against any man or woman. Certainly a kinder, more considerate person never trod the campus, nor one held in higher esteem by both students and faculty. The dean says that his next interest is in books, and then in music. Did you ever hear him play the ocarina, the sweet potato? He's quite clever. He adds he has never been very much interested in material things, particularly those things so many of us seek in order to keep up with the Joneses." We shall be glad to see him with the Class at its 50th reunion. — **FREDERIC A. EUSTIS, Secretary**, 131 State Street, Boston, Mass. **JAMES A. CUSHMAN, Assistant Secretary**, Box 103, South Wellfleet, Mass.

• 1906 •

Although these notes for the June issue are not due in the Review office until

April 20, they are being prepared on April 5, consistent with the item in the May Review that the Secretary and our classmate, Frank Benham, are leaving Boston tomorrow morning, Monday, April 6, on a trip out to San Antonio, Texas, and visit Terrell Bartlett. As also noted in the May notes, we may pick up some items of interest to classmates on this trip which will provide material for the July issue.

The New Britain, Conn., *Herald* of March 1 contained the following notice: "Governor Lodge has sent his appointment of Philip B. Stanley of this city on the State Investment Committee to the State Legislature for confirmation. This committee consists of three persons, the state commissioner of finance and control and two persons named by the Governor. They serve without compensation. The committee has the power of improving all investments made by the state treasurer and is considered one of the more important agencies regarding the state's financial structure."

Stanley is one of the well-known members of the Class, being a member of Course II, and since graduation has devoted his business activities to the Stanley Rule and Level Company of New Britain and the Stanley Securities Company of that same city. He has attended some class reunions, although none of the more recent ones. — JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

• 1907 •

You will no doubt remember having read in some issues of The Review during the past winter of a vote which was taken at the reunion of our Class last June to the effect that we recognize as the outstanding member of our Class Clarence D. Howe, Minister of Trade and Commerce for Canada. At that same time it was agreed that some kind of a more tangible evidence of our high esteem for our classmate should be secured, and it was left to Alexander Macomber, Phil Walker, and me to decide just what we should do in this respect. We wrote to our classmate Leverett Cutten of Allentown, Pa., who does silversmithing as a hobby, asking him if he would undertake the proposition of designing and making some kind of a silver cup which would be suitably engraved and which we would present to Clarence. Leverett promptly replied saying that he would be very happy to do this, and the result was that during last October I received from Leverett a very beautiful silver cup, in the design and making of which Leverett had put an infinite amount of time and thought. The inscription on this cup reads as follows: "To Clarence Decatur Howe from his fellow members of the Class of 1907, Massachusetts Institute of Technology, in affectionate recognition of his outstanding service in the field of international statesmanship, October, 1952."

We felt that if it should be possible for Clarence to go to Boston to be present at some luncheon or dinner to be attended by as many of our classmates as I could secure, so that we could present this cup

to him in person rather than to simply send it to him, it would be a very happy idea, so that I wrote to Clarence, not mentioning this cup, but telling him that we would have an article which we would very much like to present to him and asking him if he could make arrangements in his very busy life to meet with us in Boston on some date which he would select. I received a prompt reply from him in which he named a date in last November, and our plans apparently were on the way for a happy gathering when I received a telephone call from Clarence stating that on account of a special meeting of the Canadian Parliament which had been called, he would have to stay in Ottawa and could not keep the date which he had suggested.

I have had frequent correspondence with Clarence since that time, but on account of his constant duties in Ottawa, his trip lasting about five weeks which he made to South America during last January and February, his going to England with his wife on May 15 to attend the coronation of Queen Elizabeth, his continuing obligation to remain in Ottawa during the summer on account of elections and also because of the session of Parliament which will be taking place, it has proved to be impossible to arrange any date during the past, or any definite date for the future at which time Clarence can meet with us in Boston. In view of these circumstances, Macomber and Phil Walker and I decided that rather than hold the cup in my possession any longer, we should send it to him, and it was shipped to him by express on April 16.

An acknowledging reply has been received from Howe as follows: "I received from you today a most beautiful loving cup with a very flattering inscription. I understand that this is the work of Leverett Cutten and yourself, and I can say to you both that I have never seen a finer job of workmanship. I am touched by this tribute from my classmates of '07. A man in public life receives recognition in several ways, but none that I have received to date has impressed me more than this gift. I regret very much that I have not been able to be in Boston to receive this gift in person, but I feel that this fact need not detract from our luncheon gathering next autumn to which I am looking forward. Many thanks for your own part in the gift; also please extend best thanks to Leverett Cutten. I shall express my thanks to all the Class when we meet."

We shall hope that we can arrange a Boston gathering next fall, possibly in September, when Clarence can be with us even though our anticipated presentation of this cup cannot be the featured event of such a meeting. A cut of this cup appears on page 436 of this issue of The Review. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

• 1908 •

How about our 45th at Snow Inn, Harwich Port, Mass., on June 12-14? Are you going to be with us? There is still time to make your reservation if you will let us know. — H. LESTON CARTER, *Secretary*,

14 Roslyn Road, Waban 68, Mass. LINCOLN MAYO, *Treasurer*, 47 Alton Place, Brookline 46, Mass.

• 1909 •

You have probably noted the postscript in the recent letter sent to all members of the Class telling of the death of Jack Moses, VI, on April 1. This was both a surprise and a shock to all of us. At the Winter Meeting of the Alumni Association, those of the Class who were present requested the Secretary to obtain the services of two new assistant secretaries and the names of Jack Moses of Detroit and Harvey Pardee, VI, of Chicago, were suggested. The Secretary took immediate action and in a letter of February 23, Jack accepted enthusiastically stating, "I would be most happy to work as assistant secretary in this part of the country and gather such news as you would print in class notes." It seemed so appropriate to have three former class presidents among our present officers, Jim, VII, now President, Molly, XI, Vice-president, and Jack, who was president in our sophomore year, as an assistant secretary. However, on the day that the new class stationery arrived with Jack's name on the letterhead, there came an announcement of his death sent by M. S. Dennett '11 of Detroit. Jack's recent happy status appears in the May number of The Review, quoted from his letter. We wrote immediately to his widow, Doris P. Moses, extending the sympathy of the Class. In a reply, Jack A. Moses, a son, states, "Your asking my father recently to become the assistant secretary for the Detroit area was received by him with a feeling of honor and a great deal of pride." Supplementing the information given by his father he continues, "As you probably know, father was the president of the A. L. Moses Company, a firm of manufacturers' representatives. The personnel is rounded out by my two older brothers, Phil and Don. As for myself, the third and last son, I am presently in the employ of Uncle Sam, engaged in military psychiatric work, and hoping to join the company in early August at the completion of my term of active service." Jack was born in Nova Scotia and prepared at the De Merritte School. Most of us recall his record at the Institute. He was vice-president of the Class in his freshman year and president in his sophomore year. He was on the class relay team in his freshman year and played halfback on the class football team in his sophomore year. He was a member of the Varsity Relay Team in his first and fourth years, and was a member of the Institute Committee, manager of the Fencing Team and athletic editor of *Technique*. The Class has lost an outstanding member.

In the May number we told briefly of the death of Joseph Matte, I. Since that time his brother, Andrew, VI, has sent us a copy of the obituary notice which appeared in the *Detroit Free Press*. We did not realize that he had reached such distinction as a structural engineer. "Funeral services for Mr. Joseph Matte, Jr., one of the nation's leading structural engineers, will be held Monday (September 8, 1952). Born in North Adams, Mass., Mr. Matte was educated at St. Mary's Col-

lege, Montreal, and the Massachusetts Institute of Technology. He was a resident of Detroit since 1913. Chief Structural Engineer for 39 years with the firm of Albert Kahn Associated Architects and Engineers, Mr. Matte was instrumental in the design of several automotive and aircraft plants in the country, including the Ford Rouge plant and the Willow Run plant. He also supervised the design of the General Motors Building, the Fisher Building and the Detroit Athletic Club. Mr. Matte was a member of the American Welding Society, the American Concrete Institute, the Engineering Society of Detroit, and the American Society for Testing Materials. He also was a member of the Bayview Yacht Club and the University Club. Mr. Matte is survived by a brother Andrew L., a son, Joseph, 3d, and two daughters, Pauline E., and Marie C. His wife, Beulah, died in 1936." Of his brother Andrew writes: "As you see, Joe was no recluse. In fact, as a result of constant travel, he had a host of friends all over the country, both in his profession and out of it. His technical training was supplemented by an excellent classical education and his interests were varied. However, the task of raising his family after the loss of his wife taxed his time and attention, but he devoted himself wholeheartedly to it. For the last 10 years he worked under the handicap of severe physical disabilities, but at no time allowed these to interfere with his effectiveness as an engineer. He was at his office carrying out his usual responsibilities 48 hours before his death." Andrew continues, "There is practically nothing to be said about myself. I am married, have no children, and live quietly in a suburb of New York. For a few years after graduation I was in the power field. During the next 33 years I was identified with the Bell interests; the first 15 years of this time being spent in the Department of Development and Research of the American Telegraph and Telephone Company and the remaining 18 with the Bell Telephone Laboratories when these functions were transferred to that organization. Having been retired on account of age two years ago, I accepted a position as associate professor of Electrical Engineering at the Polytechnic Institute of Brooklyn. I find this new venture very stimulating but by no means easy. A good deal of water has gone over the educational dam since I listened open-mouthed to Professor Clifford! Please remember me to any of my classmates who may recall my name and accept my heartfelt thanks for your interest."

We received the following letter from Miss Gretchen Palmer, Secretary of '18, her address being The Thomas School, Rowayton, Conn. "This is to let you know of the death of your classmate, George Wilbur Everett, VI, of Chicago. Death took place on November 7, 1952. Wilbur Everett was a distant cousin of mine and I heard of his death through the return of a Christmas card marked 'Deceased.' I then wrote to the Board of Vital Statistics in Chicago to get further information. He was a widower and had no children, so think I may be the closest survivor." Our records have no entry since November 22, 1912, when George's address was Chicago.

The Alumni Office has also sent us notice of the death of Charles P. Shillaber, III, of Portland, Maine. Our records show that until 1921 his address was Boston and until April 15, 1952, his addresses were Long Island City, New York City, and Asbury Park, N. J.

We learned of Brad Dewey's, X, retirement as president of Dewey and Almy about the first of the year. His retirement was short-lived as the following letter from him shows. "When I left Dewey and Almy the end of last year, I actually went into retirement for three days before reporting for work here at W. R. Grace. It's a consulting job, helping Grace study ways of getting into the chemical business, though not, I should add, in competition with Dewey and Almy where I still hold the purely honorary post of chairman of the board. When I took this on I was assured it would be a very relaxing part time job. Perhaps it would be for a really good man, but so far I find it a particularly challenging job which keeps me busy three week ends out of every four and traveling to the tune of way over a thousand miles a month, with a flying trip to Europe coming up ear'y in April. Where you get your ideas about retiring and relaxing I don't know. I think it would be horrible. On February 23 I was presented with my 11th grandchild. Bradley Dewey Kent is the second son of my youngest daughter Ann . . . who is without doubt destined to become president."

We spoke earlier of being requested to enlist the services of Harvey Pardee as assistant secretary in the Chicago area, and you have undoubtedly noted his name on our letterhead. He has not only accepted but sends us lots of information concerning himself and his family which we did not know before. "I'm glad to accept the suggestion in your letter of February 28 that I act as our class assistant secretary representing the Chicago area and will do all I can to emulate my distinguished predecessor, George Wallis, who has retired to a less strenuous region near Boston and from which we may now expect more activity. You ask for news of my own activities. The news is that ever since I entered Tech over 45 years ago, I have achieved what I call success in nearly every respect except fame and fortune. The most important event by far was my marriage to the girl I met in Boston in 1907 and it was a tremendous success from my point of view. Her death 20 years ago was the only real break in my run of happiness. We made a couple of experiments in anthropology which disproved the old thesis of the slow progress of evolution because the race obviously took a sudden leap forward when my two daughters were born. Ruth, the older one, obtained her M.S. in anthropology at Chicago in 1937, went to Oxford for her Ph.D., spent over two years on a one-man anthropological expedition to Sumatra, where she was admitted as a member of the Minangkabau tribe where the women not only run the whole show but have the titles as well. She escaped just ahead of the Japs with a thrilling adventure, served some three years in the Far East Section of the Army Intelligence Section at the Pentagon, then a couple of years as assistant chief analyst in the China Section

of UNNRA, then back to Oxford to resume work on her doctorate, married an accomplished Pole, named Gomulicki, with a dramatic war record and who has just obtained, with her help and encouragement no doubt, his Ph.D. in psychology at Oxford where they are now living. Etta, my younger daughter, is more of an extrovert and has contributed to our country my four lively granddaughters all living in Tallahassee. In my adult life I do not recall a single dull or monotonous day, and each one has been a fresh and exciting experience. There are so many ways to get fun out of life. For the last 40 years or so I have been in consulting engineering practice, mostly in developing machines of the usual sort. It is creative work in which experience offers little guidance, although all the rules of standard practice must be known and followed in respect to details. This is precisely the kind of work for which our Alma Mater provides the best training and I have found it necessary every year to study science, engineering, and mathematics harder than I ever did at Tech. I have a laboratory with usually a few helpers and a library of some 2,000 volumes in physical sciences, engineering and mathematics. It is an engineer's dream, every job a different kind of headache but no sadness, sickness, money or worries. With this kind of a start I hope some day to achieve success, whatever that is. I should report that each of the last 44 years has enhanced my love, respect, and admiration for that great institution of learning which gave me the initial inspiration and which we affectionately called 'Tech.' That, and the inspiration of my friends, some of the dearest of whom have passed on but left their memories and influence undiminished." — CHESTER L. DAWES, *Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 366 Madison Avenue, New York, N. Y.; GEORGE E. WALLIS, Wenham, Mass.

• 1910 •

It is with sorrow that I have to announce the death of our classmate Roland Armes who passed away on February 2, 1953. The following is from the Philadelphia *Bulletin*: "Roland Kingham Armes, an investment broker and prominent church layman, died yesterday at his home, 923 South 48th Street. He was 65. Mr. Armes had served as a vice-president of Thayer, Baker and Company, with offices in the Commercial Trust Building. He was a founder, vice-president and treasurer of Faith Theological Seminary, Elkins Park. He also was a director and treasurer of the Independent Board for Presbyterian Foreign Missions. Born in Plymouth, Mass., Mr. Armes was educated in New England schools and was graduated from M.I.T. in 1910. After graduating he was employed in the field of mining engineering. Mr. Armes was a first lieutenant in Army Ordnance during World War I."

Howard B. Richardson, who has been with the U. S. Department of Agriculture, writes as follows: "Since last writing to you my two children have grown up and married. Each of them has one child and

naturally I enjoy them very much. I am retiring from my work at the U. S. Department of Agriculture effective May 31, after many years of research along the lines shown in the enclosed. You will see that I am one of the authors responsible for research work in cotton fiber manufacturing properties relationship studies. Yesterday I received a certificate of merit from the Department as follows: "Howard B. Richardson and Robert W. Webb, Cotton Branch, Washington, D. C. For developing basic information on factors of quality in raw cotton in relation to results in textile processing, which has improved technology throughout various branches of the cotton industry." After retiring I expect to enjoy a little leisure and maybe go to some of the class reunions. Then I plan some special studies along the lines I have been interested in over the last 43 years in connection with cotton fiber properties in relation to manufacturing properties. These studies will be for my own satisfaction and, if worth while results follow, will publish same. I enjoy very much reading the Technology Review that comes to me regularly. However, it is with great regret I read of the passing on of many of my fellow classmates."

Carroll Benton, one of my best sources of class news, wrote me as follows: "Just now am planning a trip down South in April and May by way of Williamsburg, Pinehurst and New Orleans. This summer or fall we may go to Canada (Ottawa, Toronto, and so on) by way of New England. May get up to Boston sometime this summer. If so, will try to give you a ring and maybe we can have lunch together. Have had the 'flu but am better now. The fellows meet once a month for lunch (the number is dwindling). On the third Thursday, this time to accommodate Gordon Holbrook, 12:30, at Miller's Restaurant in the Woolworth Building, 233 Broadway. Many of our regulars have died. Others have retired and it is hard to get some of them out. However, we generally have around eight present. Nothing special to report. I manage to keep reasonably busy with one thing or another. Just now it is income tax reports (federal and state)."

Hale Sutherland is retiring as professor of civil engineering at Lehigh University with the rank of professor emeritus of civil engineering, after 23 years as a member of the faculty. Previously he taught at M.I.T. for 17 years. Professor Sutherland is co-author of two textbooks on structural design.

This morning I received a letter from Frank Bell complaining that the drought is still on in Texas. I wish that we could share some of our New England precipitation with him. We have had three to four times the normal amount and construction has been limited to two and one-half days per week for the past two months. —HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston, Mass.

• 1911 •

A sad aftermath of the late March mailing of publicity for our informal class get-together at Snow Inn, Harwich Port, along with the revised class roster, was receipt of a letter from J. Preston of Southgate and Preston, architects, Nashville,

Tenn., announcing the death on February 8 of his partner, Donald W. Southgate, IV. A native of Nashville, Don prepared for M.I.T. at Nashville High School, and while with us at Tech he was a member of the Architectural Society and since graduation had been a faithful Eleven man in supporting the Class, the Alumni Association and all of the alumni funds to date. He leaves a wife, to whom our sincere sympathy has been expressed.

Mr. Preston thoughtfully enclosed a clipping from a Nashville paper in which Don's "sterling character, unselfish devotion to improvement of his calling and influence upon his profession" were memorialized in a resolution adopted recently by the Middle Tennessee Chapter, American Institute of Architects. The resolution follows: "Whereas: Donald W. Southgate, architect, charter member of the Middle Tennessee Division, Tennessee Chapter, AIA, departed this life Sunday, February 8, 1953; therefore, be it resolved that this assembly extend to his wife and family our deepest sympathy and sincere regret at his passing.

"In addition to the many fine buildings, which will remain as silent monuments, Mr. Southgate will long be remembered for his sterling character, his unselfish devotion to the improvement of his chosen calling and for his influence upon the architectural and engineering profession in Tennessee.

"On July 16, 1945, he was appointed by Governor Jim Nance McCord to serve a six-year term as secretary-treasurer to the State Board of Architectural and Engineering Examiners, a position he reluctantly resigned on September 25, 1950, after having served untiringly for five years.

"Donald W. Southgate enjoyed the respect and confidence not only of his many friends and acquaintances in Tennessee, but of his contemporaries throughout the country. The Tennessee Chapter, AIA, will long honor and respect his name." A fine tribute to a fine fellow, whose passing we mourn!

On the very next day, however, President Don Stevens and Lois had word of a new granddaughter, as shown in the following notice: "Born to Mr. and Mrs. Robert A. Streett, of Cooperstown, N. Y., a daughter, Dorothy Gene, on February 9, at Cooperstown Hospital. The baby, named after her great aunt and great uncle, Mr. and Mrs. E. P. Carver, Jr., of Brookline, Mass., has a sister, Lois Cassandra, age nine. . . ." Congratulations!

In the spring, 1953, a series of talks by visiting professional men at the Newark, N. J., College of Engineering, Don gave another of his many lectures on "Professional Ethics on April 6 — showing that he likes to keep active in such lines of endeavor. He also made a generous gift to the fund being raised by the Course II Visiting Committee at M.I.T. for the establishment of an Edward F. Miller Room in the Mechanical Engineering Department — asking that the Class of 1911 be given credit for the gift.

In the late winter Jersey Standard Club Second Amateur Art Exhibit of employees of Standard Oil Company (New Jersey) and affiliated companies, our own Joe Harrington, VI, of the Enjay Company,

New York City, won first prize in water color. The monthly employee magazine for March contained a fine picture of Joe standing beside his winning water color, entitled "Low Tide." We're proud of you, Joe!

A corrected address came in from one of our "Windy City" Alumni, following the recent class mailing, as seen in the following note from Wes Jones, II: "My new address is 645 South Hough Street, Barrington, Ill., as a result of our firm (Barco Manufacturing Company, electrical equipment manufacturers) moving from Chicago to a new plant here in Barrington in late March. I will be in the East on the week end of June 19-21, but will be located at Atlantic City preparing our exhibit for the Association of American Railroads convention beginning June 22." My reply, of course, suggested that he try to come via Cape Cod and at least say "hello" to the gang on Friday, June 19.

Here is one case where your Secretary made a stupid mistake, as evidenced when Calvin Eldred, VI, wrote: "I note you have me listed with E. B. Badger and Sons Company, a company no longer in existence, having been bought by Stone and Webster, who operate it as a Badger Process Division. I was retired from Badger in 1950 and since that time have been a professional engineer specializing in chemical plant equipment and with office at my home address — 24 Canterbury Road, Winchester, Mass." Carelessly I had not made this entry on the class card, although Cal had told me of the change some time ago. Sorry, Cal.

Charles Magoon, VII, for many years biologist with the U. S. Department of Agriculture in Washington, D. C., writes from 533 West First Street, Mesa, Ariz., whence he retired a short time ago, as announced in the Class notes: "Since I am no longer on an earning basis and retirement income is restricted in amount, I shall not be able to continue contributions to the M.I.T. Alumni Fund, as I should like to do. Best wishes for the prosperity and effectiveness of the M.I.T. and for you personally, Dennie."

Emmons Whitcomb, X, is chairman of the transportation subcommittee for Alumni Day 1953 and like me, he hopes to see a lot of 1911 men at the Institute on Monday, June 15. As an honorary member of the Class of 1928 (the year I "graduated" after five years as Alumni Secretary), I'll be celebrating my "25th" as the guest of that fine Class at their week end reunion being held on the Cambridge campus. And, by the way, we have been informed that Ralph Walker, IV, has written an article entitled "The UNESCO Conference of Arts and Letters at Venice," which appeared in the March, 1953, issue of the *Journal of The American Institute of Architects*.

Here's good news: Frank Osborn, III, writes air mail from Potrerrillos, Chile, S.A., where he is with Andes Copper Mining Company, as you will remember, that he hopes to be with us at Snow Inn! "I have a date at Annapolis, Md., for first week of June, when my son, Robert, will graduate from the U. S. Naval Academy, and a date at Connecticut College for Women at New London, Conn., for sec-

ond week of June, so I hope I can be at Harwich Port June 19-21. I was last there in summer of 1919, traveling from Chatham to fish with Ralph Doble '12 and Stud Leavell '07 for tautaug — most delightful day, a mile or two off shore on a rocky bottom." He also added he was sorry to learn of the death in Sewell, Chile, April 3 of Frank Curtis '12, who was with us in Course III.

There'll still be time, classmates, for you to make up your mind to join us at the '53 informal get-together at Snow Inn, Harwich Port, from Friday, June 19 to Sunday, June 21. Make your own reservations directly to Mr. Frank H. Thompson, Manager, Snow Inn, Harwich Port, Mass. and come and stay as long as you can and bring your family along, too — you'll never regret it.

Was so sorry to have missed Carl Richmond, I, on a mid-April call in Gardner and then was further disappointed to read the message he left: "My company has its annual meeting of all field men at the Marshall House, York Harbor, Maine, June 20-23, very likely making it impossible for Helen and me to go to Snow Inn." I also heard from Fred Daniels, VI, in Worcester that he was planning to go to England for the coronation and so will miss the informal get-together. However, Frank Thompson, is already beginning to receive definite reservations, although he has not yet sent me a complete list for inclusion in this issue.

As of March 31 we continue to make a fine showing as a Class in the current 12th Alumni Fund, with 104 subscribers and a total of \$2,603.50 subscribed. This class average of \$25.03 compares very favorably with the overall March 31 average of \$20.70 and there'll be a few more, I'm sure, during the closing three months of the current campaign.

Hope to see many, many of you at either or both of the big June events — Alumni Day at the Institute, Monday, June 15, and the 1911 Class Get-Together at Snow Inn, Harwich Port, Cape Cod, July 19-21. Cheerio! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

To give you a brief insight behind the scenes of a class secretary's life, I quote from Ray Wilson's letter: "Now I know why 1912 class notes are often so brief. How some secretaries are able to have a page month after month, I'll never know. I have written many letters but in the past two months have received two replies. My hat is off to anyone who can secure any news." I hope those who read the above will take the time to drop a note to Ray, just to show that somebody loves him.

Chauncey D. Davis has left Clinton, Conn., where he has operated as a consultant for many years and is now at 404 North Torrey Avenue, Ocala, Fla. The Rochester, N.Y., *Democrat and Chronicle* states that J. Howard Cather, Superintendent of the Power Division at Kodak Park, has been elected to life membership in the American Society of Refrigerating Engineers. This reminds me that last December your Secretary was elected to life

membership in the American Society of Mechanical Engineers. Old age, apparently, has some compensations.

We have the following letter from Antonio S. Romero, Santurce, Puerto Rico: "I have a copy of the unusually good group photograph made June 7, 1952, at our 40th reunion at Harwich Port, Mass. If I were not stranded out here, where Boston seems so far away, and still so close to my heart, you would, and could be exacting, and insist on my accompanying this request, for a key to the picture, with a newsletter suitable for use in the class notes of The Technology Review. But you can explain to yourself that you decided that my newsletter was not suitable. For a few moments please forget the 'harsh' requirement, and, before your memory returns and forces you to retrench, send me a key, or 'open sesame,' to the treasure of the best fond recollections of the Class which used to sit on Rogers steps on Boylston Street." Romero has been sent the key.

Lester and Jennie White spent a very pleasant evening on February 9 with the Axel Pedersens at their home in Washington. We are glad to report that Axel, who could not attend the 40th Reunion because of illness, is now very much better and is back at work. He hopes to attend the next Reunion.

Dennie of the class of 1911 reports holding an informal get-together at Snow Inn over the week end of June 19 this year. Many of you last year expressed a desire to return before another five years had elapsed. Snow Inn seems an ideal place and if enough will signify their intentions of coming back next year, we will go to work on reservations at once. Please write me if you plan to come on and if the week end before Class Day at the Institute will best suit your convenience. We certainly had a pleasant gathering a year ago and I would like to go back in 1954. — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass. *Assistant Secretaries*: LESTER M. WHITE, 4520 Lewiston Road, Niagara Falls, N.Y. RAYMOND E. WILSON, 8 Ogden Avenue, Swarthmore, Pa.

• 1914 •

As this issue of The Review should arrive before Alumni Day, your Secretary would like to remind you that Fourteen will hold its own meeting on the afternoon of that day. Details will be mailed to Fourteen men in this area about June 1. Those coming from a distance can get further details on Alumni Day from your Secretary or other class officers. The date is Monday, June 15.

It has been learned only recently that Dinney Chatfield has for some time been a deacon of the Asylum Hill Congregational Church in Hartford, Conn. The Class will perhaps also recall that for many years O. C. Hall has been a lay reader in the Episcopal Church. This is a sort of substitute-minister position as you may know.

A card has been received from Richard Paris in Washington saying that the name of his patent and trade-mark law firm has been changed to Paris and Haskell. Mr. Haskell appears as an additional partner, indicting that business must be brisk.

Alden Waitt was a recent visitor in the Boston area, having driven up from San Antonio, Texas. On the way up he had the misfortune to have a Texas buzzard driven through his windshield with the glass spilling over Mrs. Waitt and resulting in four stitches being required to close a bad head cut. Alden said that Mrs. Waitt was able to continue the journey the same day.

Again it becomes necessary to record the death of two classmates. William S. Conner of Los Angeles died on June 1, 1952. Conner came to the Institute from Great Falls, Mont., and studied mining engineering. Perhaps because he spent his early years with the Braden Copper Company in Chile and later as a resident of southern California, he never participated in class affairs. Conner was married on September 14, 1920, to Eunice Dugmore.

Edmund Key died in Marshall, Texas, on December 4, 1952. He was president of the First National Bank of that city. Key was only associated with the Class for a single term and has not been active in class affairs. No details of his family status are available, but it is known that he is survived by a son. — H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. ROSS H. DICKSON, *Assistant Secretary*, 126 Morristown Road, Elizabeth, N.J.

• 1915 •

You classmates surely will agree that your hard-working(?) Secretary deserves a respite from a long column of notes while enjoying my first Florida vacation. When the May notes were due Fran and I were visiting in Clearwater, Fla., and then went to Miami, where we visited Herb Swift's retired brother, Leroy, who lives there and who, with Mrs. Swift were charming hosts to us. From there we flew to Nassau for a week, and certainly hated to return to the northern cold, wind, and rain. In Tampa, Fla., we visited Laurie and Peggy Geer, who have been there long enough to have adopted the South but still have a nostalgic feeling for New England. Laurie is head of the chemistry course in the University of Tampa and was expecting a visit from Dean Prescott about the middle of March. Laurie and Peggy are fine and send their regards to all classmates, especially John Homan.

Nice going again, classmates, on your contributions to the Alumni Fund. Tireless Max Woythaler feels rewarded now by your splendid showing. The most recent report shows 1915 with 107 contributors, an increase of 143 per cent over last year, and \$2,837 contributed, an increase of 169 per cent over last year. In the 10-year class group from 1910-1919, inclusive, 1915 is first in per cent of contributors over last year, second in amount contributed this year, second in per cent of amount over last year, and fourth in the number of contributors this year. Keep up your good work!

The American Optical Company, Southbridge, Mass., recently announced the appointment of Ercell A. Teeson as administrative assistant to the vice-president in charge of operations. Congratulations to Teese and success to him in his new position.

Jim Tobey's recent article in *The Review* on germ warfare received a lot of publicity. There were press notices in several large city newspapers. Along those lines, Jim recently published a small booklet *Colds and Common Sense*. It is very cleverly written and illustrated and avoids the big words of the medical language. It is a worthwhile book for anyone, especially with a family, and I am sure Jim would be glad to send one to you. Jim lives at Sunset Hill, Newtown, Conn.

From the Kerite Company, Seymour, Conn., Alan Dana writes: "Our trip to Cuba was supposed to be a celebration of our 20th anniversary, and it is the first time I have been able to get Edna to go on a trip outside of this country. However, I am afraid it is the last time, as she did not seem to be enthusiastic over so many things and, particularly, the type of cooking that the Cubans have. However, I knew two Cuban electrical engineers and spent much time with them; in fact, a number of days at the home of one of them where no one could speak English except the engineer himself. We also took in nearby towns of Matanzas, Botabano, Cardenas, and Varadero Beach. This, of course, is as fine a beach as there probably is anywhere in the world and so little frequented in the winter that it is very delightful. Everyone was most friendly and hospitable and it was a very interesting experience. We shall be glad to see you when you pass by this way in the spring." Alan's boy is a sophomore at M.I.T. We hope to see Alan and Edna on our long deferred Connecticut trip to visit classmates.

From 7222 Senalda Road, Los Angeles 28, Calif., good old Dave Hughes writes, with a large generous check for the Alumni Fund. Dave says: "Things go along with me about as usual. I spend eight or nine months out of the year in California and the balance of the time in Kansas on farm business. The only difference last year was that we did not have a flood with 1,200 acres under water and water in 21 buildings as we did in 1951. We had a drought instead. In spite of having had the driest growing season on record in the history of the weather bureau, we raised enough grain to pay the taxes and enough feed to carry our cow herd through the winter and to feed out our steers." All the best, Dave, and glad to have your letter.

From Hartford, Conn., Ted Brown sent me a recent copy of the Hartford Sunday *Courant* Magazine with pictures and a big write-up of our own Dr. Stanley R. Osborn, who is state commissioner of health for Connecticut. He has done a great job down there and this piece was a glowing tribute to his outstanding accomplishments.

We used to think that Jerry Coldwell was our most nomadic classmate, but Herb Anderson, with his recent cruises and trips, is giving him some tight competition. From the Country Club at Lima, Peru, Herb writes: "I have missed the usual regularity of 1915 class notes in *The Review* and can only assume material is short or our class Secretary has become short of breath. When a month passes with no '15 notes it serves to emphasize the wonderful job you have performed for so

many years and I hope the spirit continues to move you as in the past!

"Alice and I spent the carnival days before Lent in Panama with a few hours at Colon and Cristobal. Yesterday we arrived here from Quito, Ecuador, coming down from the cool comfort at that interesting city in the mountains to real humidity and temperature at Guayaquil. Due to heavy passenger and freight combination we came down at both Talara and Chiclayo which are just jumping-off spots for oil personnel. This South American vacation results from talking too fast at an interesting party in the Connecticut Berkshires last fall. One of our oldest friends mentioned leaving with his wife the day after Christmas by steamer for the West Coast of South America, the Chilean Lakes and then B.A. and the West Coast. In a joking manner I suggested we meet them in Buenos Aires (to Alice), and then come home by steamer and slow stages through Rio, Trinidad, and so on, together. Here we are, and while Alice cools off in the pool because I want to fly to La Paz, Bolivia, on Monday and she prefers Cuzco, or more days in Santiago or Valparaiso, I am doing the unusual — writing a letter. We will be back in Philadelphia in April and look forward to seeing you this summer when you come to Philadelphia as promised. Always my best to you and Fran." What an interesting experience to have, and we all thank Herb for his wonderful travel letter.

The story of the 35 years of building success of the Dwight Building Company, New Haven, Conn., of which our own Vince Maconi is President, is told in a beautiful book about 10x15, with a maroon suede cover, containing pictures of the organization and many pictures of the outstanding jobs Vince's company has done, which include many buildings for Yale University, industrial plants, hospitals, schools, churches, and private residences. This is really a beautiful job and a credit to Vince's able leadership.

It is sad to report another passing in our Class. Kshitish C. Basu, II, died in Howrah, India, but no date was given. Help Max on the Alumni Fund and you thereby help Azell — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

• 1916 •

We're coming into the homestretch in this series of class notes and with only one more column to go it begins to look as though we are going to make it. We hope that all are well.

Our mail bag while not heavy is ample, and here we go with the first letter, a very pleasant surprise from Ernest Gagnon: "I have had your letter of December 22 in my folder for answer for quite a while. I thought if I put it there, some day I would get off a letter telling you what I was doing. As far as reunions go, my trouble has always been that I was too far away. That still holds, although I expect to be back in New England more often than in the past years but at no special time. But the time around June always seems good to me. Your letter was sent to Peru. I am no longer located there. At the end of 1951, I came back to the United States with the intention of retiring and making my home

in Alabama. I did not quite make it then, as in May, 1952, I went back to South America again to Argentina for six months to replace temporarily the superintendent of the Goodyear Tire and Rubber operation there (I had been there previously from 1930 to 1942). I was there at the time of the death of Senora Eva Peron. That assignment was finished about November 1, and after a short time at Goodyear's plant in Sao Paulo, Brazil, and another short period in my old stamping ground in Lima, Peru, I got back to the U.S. in November. So, after 36½ years of service with the Goodyear Tire and Rubber Company, I went on the pension roll on January 1, 1951. That 36½ years included eight years in Canada, 12 in Argentina and 10 in Peru. The rest was spent in Akron and in the U.S. Army in World War I. So actually out of 36½ years in Goodyear from the date of our graduation in 1916, only about four years were spent in Akron. I am located in my wife's hometown here in Hartsboro, Ala. If any classmates pass this way, we will be pleased to see them. It is not far off the route to New Orleans or Florida. The nearest city is Columbus, Ga., which is about 35 miles away. I expect to go to Massachusetts occasionally, but do not know just when. Since December 31, I have been getting our home fixed here, and playing around with a few cattle. Also doing some long delayed reading." Hope you can tie one of your trips to Massachusetts in with our Annual Reunion on the Cape, Ernest.

We would like to take this opportunity to remind all of you once again that we are having our annual get-together for the members of the Class of 1916 — M.I.T. at the Coonamessett Ranch Inn in North Falmouth, Mass., on the week end of June 5-6-7. This is our 37th (Whew!) Hope you can make it.

Clint Carpenter writes: "I appreciate your sending me the note you received from Scott Wells concerning my son, Jerry. He has been getting along pretty well, of course, working hard, but seems to enjoy himself too, which is as it should be. I was very agreeably surprised to receive a phone call at home on Sunday night two weeks ago, and to find that it was Arvin Page calling. He and Mrs. Page were on an Easter week end holiday and were at Virginia Beach so, of course, they came and spent the evening with us. It was the first time I had seen Arvin for a number of years and we thoroughly enjoyed the evening together. It is so seldom that I run into a 1916 man in this vicinity that it's a real occasion when it happens." Nice to hear from you, Clint.

In the second session of a convocation held at the Case Institute of Technology, April 10-11, under the title "The Atomic Age — Challenge to Free Men," Vannevar Bush was one of the speakers.

Hy Ullian gives us a helping hand with this one: "You might be interested in the enclosed paper by General Albert C. Lieber that was delivered last week (March 24) at the American Congress of Mapping and Surveying at Washington. General Lieber delivered a very fine talk that was very well received. He said he had tried to get to the last reunion but something came up at the 11th hour that

prevented him. He thinks the yearly reunions are a great idea and hopes that time will permit his attendance this year. Incidentally, I am looking forward to the reunion and the renewal of meeting all who can attend." That's the spirit, Hy! The paper which Al prepared gave an interesting explanation of the importance of maps in the modern world and especially as a source of information in such development projects as domestic and industrial water supply; flood control; irrigation; agricultural development; and many other public and civil works. He pointed out that great effort was being directed toward international co-operation in mapping and that "with the formation of the North Atlantic Treaty Organization (NATO) and its attendant co-operative mapping program an excellent opportunity was presented to weld into one coordinated effort the overall mapping needs of the member nations."

An invitation to a local function from Melville Rood would seem to indicate that he is well and active. This item recently appeared in the New York *Herald Tribune*: "Mr. and Mrs. Walter Binger of 180 East 75th Street and Greenfield Hill, Fairfield, Conn., have announced the engagement of their daughter, Miss Francis Sorchan Binger, to David Lindsay Mitchell of 141 Park Avenue, son of Mr. and Mrs. William A. Mitchell of Cincinnati and the Onteora Club, Tannersville, N.Y., formerly of Short Hills, N.J. The wedding will take place in June. The prospective bride was graduated from the Chapin School in New York, and in 1948 from Bryn Mawr College. . . ." We received a short note from Chuck Loomis in which he enclosed a notice of a speaking engagement by Bob Wilson at the Junior Achievement Banquet held in St. Louis, Mo., in May. Chuck is still actively pushing the 50-year fund and will be pleased to hear from any of you who have not yet contacted him.

Here's a nice letter from Bob Wilson: "Replying to your letter of March 11, I believe that the two items covered in my letter of February 19 — my *Saturday Evening Post* article and my service on the Committee on Continental Defense against the Atomic Bomb — are about all the news items of importance which I have to report. The Class of 1916 has recently lost two of its most active members from the Chicago area — Ed Hale by death and I see from your notes that Joel Connolly has moved West. I had the unusual pleasure of spending two out of the last three week ends in the Boston area — first for a meeting of the Visiting Committee of the Department of Chemistry and the winter meeting of the corporation, and two weeks later for a two-day visit to the Lincoln Project. . . . Our visit was very interesting and included a trip to the tip of Cape Cod, which has certainly changed a lot in the 20 years since I was last there. I had my first hospital experience last summer, but now am well recovered and unfortunately have regained most of the weight I lost on that occasion. That and the celebration of my 60th birthday on Friday makes me realize that time marches on. Our three daughters are all married, and after the arrival of three granddaughters we finally

have our first male descendant, born last fall!" You're a pretty busy fellow, Bob; it's amazing how many things you get yourself into. We note with interest that you are serving on a committee to raise at least \$500,000 to make sure that Chicago does not lose Channel 11 as an educational television station. This committee, known as the Chicago Educational Television Council, will serve as the governing body for the proposed station and will be developed to include representatives of all civic, educational, and cultural activities within the signal area of the station.

Another of our classmates who manages to keep pretty busy is Steve Brophy. We have about five clippings here which recount some of his more recent accomplishments and to quote each of them fully would be to fill many more pages than we are allotted for our monthly column. However, we would like to call your attention to the highlights. *Modern Industry* in its December, 1952, edition salutes Steve's firm of Kenyon and Eckhardt on its Christmas gift plan which directs the funds that ordinarily would go into gifts for employees to a fund which is set up for the care of European war orphans. It certainly is a commendable approach to one of the great problems of our day. *Look* magazine under the heading of "Look Applauds . . ." pays tribute to Steve in glowing fashion in one of its recent issues with the following citation: "Anyone can, and many do, speak eloquently about 'preserving our American way of life.' But Thomas D'Arcy Brophy is one of the few who have been successful in dramatizing for Americans their priceless heritage and their responsibility to guard what they often take for granted. He has been president of the American Heritage Foundation since its beginning in 1947, when it sponsored the Freedom Train, which carried America's historical documents to citizens all over the country. The Foundation's most recent project was its unprecedented register-and-vote campaign for the presidential election. . . . For his patriotism and efforts to promote good citizenship, Brophy has been honored with awards from the American Legion, the Sons of the American Revolution, the National Conference of Christians and Jews, and Syracuse University's School of Journalism. . . ." Thanks to Harold Russell for sending this article from *Look* to us.

Hovey Freeman sent us a clipping which called attention to the annual award of the gold medal contemporary award of *Printer's Ink* to Steve. And still on Steve, Obie Denison '11 sent us an excellent article on Steve which appeared in the New York *Herald Tribune*, and although we have devoted quite a bit of space to Steve's activities, we'd like to include from this article the following short excerpt: "At present Mr. Brophy's thinking is moving into broader channels of national citizenship and responsibility. This was well illustrated last Friday at the *Printer's Ink* dinner. At that time he enlarged on a theme that has been occupying his thoughts for some time: the need for incentive and inspiration for the average working person. His reasoning goes something like this: the day of pride in individual craftsmanship is largely past because of the demands of mass produc-

tion; we must have something to replace that feeling if we are to keep the nation from falling apart at the seams; that something should be 'pride of ownership'; this can be imparted to the average person by giving him a larger share in capitalist enterprise. The way to do this, Mr. Brophy says, is through profit-sharing and ownership, by stocks or otherwise, in income producing properties. . . . Mr. Brophy is truly surprised when it is pointed out that this concept might be considered pretty radical in some quarters. His feeling is that the only way to preserve the capitalist system is to make more capitalists — to give the average person a stake in the system."

We regret very much having to report the death of Albert Holmes, Course VI. We have no details other than a notice that he passed away on February 21 of this year.

This winds it up for another month. We hope that when we get ready to write the last one in this series next month, we will find the mail sack overflowing. — RALPH A. FLETCHER, *Secretary*, Post Office Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York, N.Y.

• 1917 •

We are sorry to report the death of Louis Wyman, who retired as assistant manager of William J. Underwood Company in 1951 after more than 30 years of service. Louis was a regular attendant at reunions and other class functions for many years. His genial personality always added to these occasions and the gamblers in the crowd will well remember his ability at the bridge and poker tables.

We are indebted to Fritz Althouse for a copy of a publicity release from the American Road Builders Association covering the appointment of Dutch duPont as Commissioner of the Bureau of Public Roads. Lieutenant General Eugene Reyhold, Executive Vice-president of the Association, comments "The Nation is indeed fortunate in obtaining the services of such an able administrator and engineer. Mr. DuPont's unique qualifications and broad background in dealing with highway problems fully equip him for the task of finding a solution to today's bewildering traffic problem. . . ." As many of you know Dutch has had a long and distinguished career in public service, having served as a member of the Delaware State Highway Department from 1922 to 1949, including 23 years as chairman.

Bill Eddy has for some time devoted the major portion of his time to national affairs. His firm, Metcalf and Eddy, has been retained by the U. S. Army Engineers for Project Blue Jay which covers the building of a large air base in Thule, Greenland. Bill spends considerable time in Greenland, making trips about once a month. When and if you can find him in Boston, he is now located at 334 Boylston Street. It became necessary to establish this branch office to handle the Greenland job. Gerald W. (Tommy) Thomson, who was recently retired by the Navy with the rank of Captain after a distinguished career in naval construction work,

is associated with Bill on the Greenland job.

Service to the nation seems to be the pleasant theme of the notes. From a news release of the Army Chemical Center we learn that Duncan MacRae, Chief Consultant for the Chemical and Radiological Laboratories and one of the Chemical Corps' key civilians, retired after 24 years of continuous service at the Army Chemical Center. He was honored with a special parting ceremony and the 327th Band played their famous rendition of *Auld Lang Syne*. We always thought that the late Mr. Fitzgerald of Boston held the monopoly on the rendition of that song.

We have not heard from Stan Hyde since he retired as principal of North Yarmouth Academy. He apparently could not stand too much leisure time for he has become associated with the Hyde Windlass Company of Bath, Me. He also owns and operates several summer cottages at Popham, Maine.

We have new addresses for Potts Mehaffey, R.D. 1, Fayetteville, Pa., and Bill Canan, Box 813, State College, Pa. — RAYMOND S. STEVENS, *Secretary*, 30 Memorial Drive, Cambridge, Mass. FREDERICK BERNARD, *Assistant Secretary*, 24 Federal Street, Boston, Mass.

• 1918 •

On April 11 the brethren assembled at the M.I.T. Faculty Club for a pre-reunion dinner and get-together. Present were Erving C. Betts, Eli Berman, Lovejoy Collins, Mr. and Mrs. Lester C. Conner, Harry Camp, Reverend and Mrs. George Ekwall, Mr. and Mrs. Stan Franklin, Sax Fletcher, Mike Flett, Harold D. Forsyth, Mr. and Mrs. Al Grossman, Mr. and Mrs. Grenville Hancock, Mr. and Mrs. Thomas Kelley, John W. Kilduff, Leonard Levine, Mr. and Mrs. Leo McNally, Mr. and Mrs. F. Alexander Magoun, Raymond P. Miller, Mr. and Mrs. Thomas Nolan, David Rubin, Max Seltzer, Mr. and Mrs. Royal Barry Wills, Mr. and Mrs. William Wyer, Professor and Mrs. Harold Weber. We were a little proud that in this small company of 25 men 20 per cent of them were in *Who's Who in America*; a much more difficult list for us to make than *Who's Who in Engineering*. The five were Flett, Magoun, Weber, Wills, and Wyer. Mr. and Mrs. Leo McNally get the diamond studded teething ring as far as is now known. They have eight children, six sons and two daughters. We think Fred Washburn is the runner-up with his brood of seven.

After the fraternizing, the turkey dinner, the exchanges of "do you remember when," and the singing, pleasantly filled with good fellowship and costly groceries, the group listened to plans for reunion. As chairman of the Boston Committee, Max Seltzer talked about ideas, methods, and implications. He was followed by Sax Fletcher, Chairman of the New York Committee, who reported on preferences, hopes, and pet aversions in his area. After Ray Miller said a few words about a plan for raising a 50th Anniversary gift for the Institute, Mike Flett spoke delightfully of our four college years as though they always made for laughter, intellect, self-fulfillment, and nary a tear. To end the evening, Bill Wyer — who, like Sax and

Mike, had come up from New York especially for the occasion — gave an off-the-record account of the awesome dilemmas which the Long Island Railroad faces because of the politicians. Those who are elected to serve the public, often menace and keep anxious citizens who are honestly public minded. Just who is cooking whose goose is not always apparent from inside the oven.

There were a number of the brethren who would have liked to have been with us, but who could not. Fred Philbrick was on the train up from Florida. Bill Foster was south on a long deserved vacation from his labors in Washington as Deputy Secretary of Defense. And there were letters. Perhaps the most interesting was from Stuart E. Elliott, as follows: "Getting back in April, 1919, I should have returned to M.I.T. as I have long regretted, but instead went gold mining and prospecting for several years, worked in Wall Street, made a good deal of money. Came the depression, ditto lost same, or most of it; went on an Arctic expedition with a lot of Norwegians, where we shot bear and muskox, and saw some evidence of there being oil in a certain area of Greenland; made a small amount of the utterly filthy but unfortunately necessary thing called money, fiddling with oil wells in Oklahoma and Texas; rode a push bike, for no good reason except curiosity and liking it, from Texas to Mexico City, followed by riding a horse for 600 miles, through the wilder parts of the state of Oaxaca; wrote and sold a couple of short stories — one to the *Ladies Home Journal*, believe it or not! I wrote a longish novel (very bad, no sale); travelled through parts of Central America with an archeologist, who was on a job for a museum; tramped all over the island of Dominica B.W.I., and wrote an article on it for the Museum of Natural History — got paid too! — and finally rejoined the Air Force in 1942. There, being too old to fly (they said), I was trained for Intelligence, so they made me an air base commander.

"After various dull jobs in the U.S., went overseas, landing in Guam on August 14, 1945, the day the fighting was over. After a few months, I went to Japan, where I worked with military government, and the Natural Resources Section. My jobs included supervision of prefectoral schools at one time, and later the farms, forest, mines, and fisheries of Miyagi Prefecture. I also spent some time inspecting mines all over Japan, and saw parts of all four main islands. During the time, I was able to climb Fuji, which is no mountaineering feat, but is a long uphill walk for a man over 50. However, I enjoyed it. As to getting married, I put it off until 1943, when I acquired a most attractive wife, and a ready-made six-year-old daughter. We are still married happily, in spite of almost four years of overseas separation. Now, I am living here, and trying to be a writer, although so far the editors don't seem to believe it." — GRETCHEN PALMER, *Secretary*, The Thomas School, Rowayton, Conn.

• 1919 •

L. R. Sorenson reports that this has been a busy year for his company in New-

port News, with the completion and delivery of two big jobs, the S.S. *United States* and the modernization of the U.S.S. *Lake Champlain* for the U. S. Navy. He was on the maiden voyage of the former and spent two weeks traveling in England and the Scandinavian countries seeing the sights and visiting their shipyards. William Saunders is now assistant professor in the Engineering School of Washington University, St. Louis.

George McCarten has recently returned from a vacation in Florida. He is making it his special project to get our classmates west of the Alleghenies to come to our 35th Reunion and is optimistic about it. Good luck, George! Frank Reynolds is director of research, Bird and Son, Inc., East Walpole, Mass. He has moved to 6 Moose Hill Road in East Walpole. Frank has four children, all married, and seven grandchildren.

Russell Smith is finishing his 19th year with the U. S. Public Health Service. Recently he bought a new home at 3855 Settle Road, Mariemont, Cincinnati 27, Ohio. Both his sons are married. The older one lives in Chicago, has two children — a daughter nearly four and a son not yet one year. His other son lives near Cincinnati, has no children. Ark Richards called on your Secretary April 1 in New York, with his wife on his way to Europe for a two-month stay.

Jacob Lichter writes that he is looking forward to June, 1954, and hopes to be at the Reunion. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 385 Madison Avenue, New York 17, N.Y.

• 1921 •

Last call for the annual 1921 Class party at the Hotel Statler, Boston, about 5:00 P.M. on the afternoon of Alumni Day, Monday, June 15. Look for the room number and exact time on the bulletin boards at the Statler and on the Class registration list in the Rogers Building lobby near the registration desk. Come and relax or exercise, as you will, in the twilight hour twixt the day's events and the Stein banquet.

One of the highlights of the Alumni Day program will be the formal dedication of the World War II Memorial in the Main Lobby, which was underwritten by the Class of 1921 as a 25th anniversary gift to the Institute. Completed last year after painstaking efforts to insure accuracy of names and propriety of design, the travertine marble memorial includes, among those it honors, the names of five members of our Class who made the supreme sacrifice. Zam Giddens, his Gift Committee and all members of the Class who supported the project deserve most sincere thanks.

The many heartwarming pleasures of these annual homecoming days, — seeing the vast array of buildings and equipment, greeting old friends of the instructing staff and re-living our days with others of the Class, — combine with an up-to-the-minute program of events to provide precisely the right admixture of past, present and future. If you have attended before, come again; if you have never experienced that deep down feeling of satisfaction which good fellowship affords, come back to Tech on June 15.

Maxine and your Secretary were dinner guests of Helen and Ray St. Laurent on one of those all too rare occasions when we are able to get together to discuss and plan Class affairs. Always a staunch supporter of these news columns, Ray gave us a clipping from a recent issue of the *Boston Herald* which pictures a family group in Bermuda with the caption: "Returning home from a vacation at Waterloo House, Pembroke, are Dr. and Mrs. Reginald Smithwick of Wyndcote, Marblehead Neck, and their son, Stephen, who is a student at Choate School, Wallingford, Conn." Reg is surgeon-in-chief of the Massachusetts Memorial Hospitals. Also of interest, Saul Silverstein, President of Rogers Corporation, was tapped for another European assignment and spent a week in Paris during April as one of four U.S. industrialists attending the nineteen-nation conference on industrial management, sponsored by the Organization for European Economic Cooperation. Saul also spent a week in Belgium, reviewing the area he visited last year as a member of a Mutual Security Agency team, and then a week at the Hanover Industrial Fair in the British Zone of Germany. Ray received a fine letter from Helier Rodriguez, enclosing a descriptive folder of the beautiful Rodi Theatre, the latest of a chain built by Helier in Havana, Cuba, and reporting his doings as detailed in this column last month.

Franklin T. Flaherty and Mrs. Flaherty may well be proud of young Franklin T., Jr., M.I.T. '56, who is on the Dean's List. Frank, Sr., is a patent lawyer with Du Pont in Wilmington, Del. The Flahertys also have three daughters and four grandchildren. The erudite annual report of our distinguished President, Jim Killian '26, includes reference to honors which came to Edward R. Schwarz, Professor of Textile Technology in the Department of Mechanical Engineering at the Institute. Ed has been made an Honorary Life Member, American Society for Quality Control and American Association of Textile Technologists. He is the author of three papers on various aspects of the textile field, published during the last year. Jack Rule, Professor of Graphics and Head of the Section, is the author of "A Philosophy of the Science of Graphics," appearing in the *Journal of Engineering Education*. Referred to in the annual report is the fund in memory of the late John A. Grimmons, which is devoted to loans for undergraduates in Course VI and for equipment for the Electrical Engineering Department.

Right on the heels of the letter from Helier Rodriguez, referred to last month, came the following from Robert S. Cook: "Mrs. Cook and I have just returned from a pleasant vacation trip. We drove to New Orleans by way of Mobile and Biloxi, arriving in time to see the final portions of the Mardi Gras. We sailed on the *Italia* for a two week's cruise in the Caribbean, with stops at Kingston and Curacao. We landed at La Guaira and drove up the mountains to Caracas. Following a stop at San Juan, we arrived at Havana. There we were met and royally entertained by Helier and Mrs. Rodriguez. They took us to the Havana Yacht Club for lunch and

drove us around the city during the afternoon. Their new home, which will be finished soon, is the last word in modern design and built for comfortable living. On returning to New Orleans, we drove to Ft. Lauderdale and spent a couple of weeks there before going home." Bob is engaged in the engineering of highways for the New York State Department of Public Works and makes his home in Canandaigua, N.Y., where he is president of the board of managers of the Brigham Hall Hospital.

Lansing T. Carpenter is director of advertising and public relations of the Russell Manufacturing Company, Middletown, Conn., and makes his home at Walkley Hill, Haddam, Conn. Edward M. Epbridge, who has been associated with Du Pont's rayon operations from the start some 30 years ago, is manager of the quality control section of the nylon division in Wilmington, Del. John E. Shaw, formerly of Pasadena, has reported a new address, Box 721, Rancho Santa Fe, Calif. New addresses have been received for Harry M. Ramsay and Harold F. Stose. Mel Jenney is a member of the patent counsel staff of the Institute's Division of Industrial Cooperation and a member of the firm of Kenway, Jenney, Witter and Hildreth, Boston patent lawyers.

Arthur E. Raymond, Vice-president in Charge of Engineering of the Douglas Aircraft Company, Inc., Santa Monica, Calif., has been appointed a member of a new committee of the Department of Defense which is concerned with problems of defense against atomic attack. Philip M. Johnson, a colonel and former chief of the American Forces Network, has returned from Europe to become chief of special services at Governor's Island, N.Y. His military career started in the AEF in World War I and between wars he had 14 active duty tours. Resuming active duty in 1942, he served in Africa, Italy, the Anzio beachhead and the landing in southern France. He holds the Bronze Star with Oak Leaf Cluster, the French Croix de Guerre with Palm and the grade of Knight in the French Legion of Honor. Formerly associated with Nash Kelvinator Corporation and General Motors Truck and Coach Company, he is a member of the American Society of Refrigerating Engineers and the American Society of Mechanical Engineers. Your Secretary welcomes this data on Colonel Johnson from the Army but is somewhat puzzled by its being on a letterhead reading "Army Home Town News Center, Kansas City, Mo.," with a Governor's Island date line and a by-line that says: "Mailed from Korea, March 10, 1953."

Edgar S. Russell is a food distributor in St. Petersburg, Fla. He is married and has no children. Stanley L. Scott, a major general, is director of the Office of Military Assistance in Washington. He and Mrs. Scott have two sons, William B., M.I.T. '44, and Gilbert T., a West Point graduate. John W. Shepard is superintendent of the tool division of the Walworth Company, South Boston, and makes his home in North Easton, Mass. He is a member of the Brockton University Club and a former president of the Easton Lions Club. John and Mrs. Shepard have

two young daughters. George E. Shoemaker is architectural lighting designer for the Philadelphia Electric Company and a lecturer on the subject at Temple University and Drexel Institute. He is a member of two technical committees of the International Commission on Illumination, a former chairman of the State Wiring Service Committee and also of the Philadelphia section of the Illuminating Engineering Society. In community affairs he is active as an officer of the Philadelphia Society for Employment and Instruction of the Poor. At home in Ethan, Pa., George admits to two main hobbies, TV and a Piper Cub. The Shoemakers have a daughter, Mary.

Preston W. Smith is associate professor of physics, Clarkson College of Technology, Potsdam, N.Y. He reports seeing O. Kenneth Bates, who is head of the Mathematics Department of St. Lawrence University. The Smiths' older son, Kenneth, a major in the Air Force, attended Harvard, West Point and Georgetown. Preston, Jr., was graduated from Harvard, Ardis from Swarthmore and Deborah is attending Cornell. William Thompson Smith is senior consulting engineer with Ford, Bacon and Davis, Inc., New York City, and lives in Larchmont, N.Y. Sons Alexander and Michael are graduates of Dartmouth and Priscilla attended Immaculata Junior College. Robert R. Neyland, retired brigadier general and veteran football coach of the University of Tennessee, is reported to be indefinitely out of football ranks on the advice of physicians. He will continue as the University's athletic director.

See you June 15 in Cambridge. — CAROLE A. CLARKE, *Secretary*, Federal Telecommunication Laboratories, Inc., 500 Washington Avenue, Nutley 10, N.J.

• 1922 •

A release from the Du Pont Company tells us that Harold S. Clemens, Director of Production of Du Pont Fabrics Division retired for reasons of health last March after more than 25 years with the company. Mr. and Mrs. Clemens will make their future home in Barnstable, Mass. More and more of our classmates are getting into politics. This past winter Captain Richard M. Rush was a candidate for assessor in Winchester, Mass., but missed election by a narrow margin.

Bill Mueser recently was on a month's business trip to the Orient taking in Tokyo, Okinawa, Hong Kong and Honolulu. While at the Royal Hawaiian in Honolulu, Bill saw Al King and his wife who were there on vacation and shortly after, encountered Ab Johnson who was there as a member of a committee sent by the Secretary of the Navy. Quoting in part from Bill's letter, he says, "I must draw on your imagination and ask you to try to visualize Ab Johnson riding a surfboard for the first time in his life." Ab should report in detail on this phase of his career. George Dandrow's daughter, Carol, was married last March in New York to Arthur H. Steuer, Jr.

Tardy news of the death of Robert A. Sharrer on August 4, 1950 has just been received. No information as to the circumstances is available. Still another death is that of Conway B. Barbour, who died

early in 1952 in Hermosa Beach, Calif. Again, no knowledge of the circumstances.

New Addresses: Robert P. Ramsey, Cooper-Bessemer Corporation, Mt. Vernon, Ohio; Thomas E. Phelan, 338 Kensington Avenue, Montreal 6, Province of Quebec, Canada; George B. Bailey, 290 Congress Avenue, New Haven, Conn.

Hope to see everyone at the Institute on Alumni Day, June 15. — C. YARDLEY, CHITTICK, Secretary, 41 Tremont Street, Boston 8, Mass. WHITWORTH FERGUSON, Assistant Secretary, 333 Ellicott Street, Buffalo 3, N.Y.

• 1923 •

If you are planning to be at the Reunion, June 11-15, you should have responded by now to the mailing which was sent to all members of the Class about Reunion registration. Particulars are given in the mailing. It is enough to record here that the Reunion will begin Thursday afternoon, June 11, at the Sheldon House, Pine Orchard, Conn. near New Haven. It will continue at the Sheldon House through Sunday morning, June 14, and will be completed with the Alumni Day activities at Cambridge and Boston on Monday, June 15. We hope there will be a good turnout.

At a banquet session of the Reunion held Saturday night, June 13, the quinquennial meeting of the Class will be held. The principal item of business at the quinquennial meeting, as outlined in the class Constitution, is the election of officers. President Robert P. Shaw has appointed the following committee to submit nominations: Egon E. Kattwinkel, Chairman, John E. Burchard, A. Raymond Holden, Herbert L. Hayden and Royal Sterling. This committee is submitting the following slate of officers for election at that time: for President, John H. Zimmerman; Vice-president, David W. Skinner; Secretary, Howard F. Russell; Assistant Secretary, Wentworth T. Howland; Treasurer, Lyman L. Tremaine; Class Representative on Alumni Council for the period 1957-1962, George A. Johnson.

For comparison with the foregoing slate, the present officers are President, R. P. Shaw; Vice-president, John H. Zimmerman; Secretary, Horatio L. Bond; Assistant Secretary, Howard F. Russell; Treasurer, Elliott A. Adams; Alumni Council Representative, George A. Johnson. The president, treasurer and secretary have served the Class for a considerable period. George Johnson is serving his second five-year term, which term is set by the Alumni Association and runs to 1956. His nomination now is to provide a class nominee when his name again goes on the alumni ballot. The men recommended in the slate by the Nominating Committee have all served the Class in various ways and are entitled to the recognition which goes with election to a class office.

I said in the notes last month that I had only one more set to prepare. I will have to prepare the set of notes which appear in the July issue because these have to be written before the election of a new secretary. The new secretary will write the notes beginning with the November issue.

Channing P. Clapp, 210 Main Street, Matawan, N.J., is chairman of the Reunion Committee and details of the Reunion Program should be taken up with him. Take up matters of registration at the Sheldon House with David W. Skinner, 448 Quinobequin Road, Waban 68, Mass.

Chan recently ran across a personal item in the January, 1953, issue of *Chemical Engineering* to the effect that Francis P. Squibb had been promoted from western manager to assistant general manager of the pigment, chemical and color division of Sherwin-Williams Company, Chicago. — Howard B. Keppel is mayor of the Incorporated Village of Plandome Manor, Long Island, N.Y. Keppel is a partner in the firm of Parry Engineering Company of New York.

Henry B. duPont had the privilege of enumerating the accomplishments of his M.I.T. roommate, Charles A. Thomas, on January 16, when the latter received the Perkin Medal from the American Section of the Society of the Chemical Industry. Dr. Thomas was once on the Class of 1923 list but now affiliates socially with the Class of 1924. He is board chairman of the American Chemical Society and President of Monsanto Chemical. — I received information that Madeleine Moguez died at Thorembais Saint Trond in Brabant, Belgium, on December 10, 1952. Miss Moguez had been in the Brussels office of the Croix-Rouge du Congo in the position of secretary from September, 1923 to March, 1949, when she retired. — HORATIO BOND, Secretary, National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass. HOWARD F. RUSSELL, Assistant Secretary, Improved Risk Mutuals, 15 North Broadway, White Plains, N.Y.

• 1924 •

By the time this issue reaches you "June," in the words of the song, "will be bustin' out all over." Very shortly, on the 15th to be exact, Alumni Day will be with us again. As always '24 will be well represented with the New York contingent bidding fair to eclipse the Boston group. Although definite reservations had not been made at the time of writing it looks as though we will be joined by a fair number of men from the far reaches. Frank O'Neil and Charlie MacBrayne hope to make it from Chicago; Blanchard Warren, probably coming back from Oregon to report to the home office, expects to be with us; so does George Fertig from Alabama and Al Roig from Puerto Rico. Of course the Honorable Blay Atherton will be down from New Hampshire and Johnnie Henninger will use it as an excuse for a holiday from his Reading, Pa., business. And don't be surprised if our peripatetic traveling secretaries MacCallum and Simonds show up. Certainly hope we will have a good representation. You all received George Parker's letter in April. We have a lot of things to discuss.

One classmate who would have assured the success of this or any party will not be with us. The Honorable Justice Arthur Tyndall of New Zealand spent several weeks at M.I.T. this spring. As one of the world experts on labor relations he was giving a series of lectures in the School of Industrial Management. A very

charming and lively gentleman, with the greatest fund of stories your Secretary has heard in many a day. Unfortunately he had to leave for London a while ago to make certain the Queen got her crown in good order. We think it probable that there will be moments in the Abbey when his immediate neighbors will not be quite as serious as the occasion demands.

The Bell Company, a wool textile company in Worcester, has a new vice-president. It's Sargent Heath. He's been with them since 1931, first as purchasing agent then assistant treasurer. As vice-president he succeeds a gentleman who has stepped up to the presidency.

Maybe you saw General Doolittle's article in the January 30 issue of *Planes*. "Doolittle Forecasts Age of Air Wonders," it was called and Jimmie ought to know. Names are peculiar things. How did a guy who does so much get saddled with a name that indicates just the reverse?

Paul Cardinal's hurried trip to Europe evidently went off in good style. Most of his time was spent in Switzerland, with a stop-over in London. Another of our perennial travelers who succeeded in getting away from it all was Ed Wining. With one job in California and another in Bermuda, Ed has found it essential to give both his personal supervision this winter.

A note in the March issue of *Civil Engineering* lists several changes of assignments in the Upper Mississippi Valley Division Office of the Corps of Engineers. Among them, Lawrence B. Feagin formerly principal civilian engineer in the St. Louis District Office, now chief of the Operations Division, Office of the Division Engineer. You will remember that a year or more ago the Army gave Larry a medal for a little job of saving the government some money.

After several years in the bayou country, Frank E. Reeves moved back to the frozen north, New Jersey to be exact. Evidently his blood had thinned out so much that he couldn't take it but now things have been set right again. Frank has been made district manager of the Automatic Switch Company in Los Angeles, and has headed for warmer climes. It's a real honor for this is the company's first district office and his territory is not small — the whole West Coast and the Rockies. His company makes solenoid valves, automatic transfer switches, relays, contactors and solenoids.

President Charles E. Herrstrom of the Cleveland Patent Law Association recently sat on a Supreme Court in Pittsburgh, heard the case of Kovaco vs. Fishgill. Afraid this doesn't quite put Charlie in the class with Justice Tyndall, however, since it was an "original, humorous, mock trial" held as the smash climax of a meeting of patent attorneys.

We told you a while back that Vincent K. Cates had joined George Parker's outfit, Anderson, Nichols and Company in Washington. Now he's been transferred to the main office here in Boston. Haven't heard anything directly from Samuel Hallock duPont, but we understand that he is one of the country's authorities on springer spaniels and is (or was) president of the Springer Spaniel Association. Hal is living in Wilmington.

So much for now. Our 30th reunion is only a year away. At Alumni Day we should come up with some finite answers — where, when, who, and so on. If you can possibly do so, come and join us. — HENRY B. KANE, *General Secretary*, Room 1-272, M.I.T., Cambridge 39, Mass.

• 1925 •

The big news this month is the Second Annual Class Dinner which was held at M.I.T.'s new Faculty Club on Thursday, April 16, 1953. Twenty members of the Class were present, and many more from this area, including your Secretary, were missing because business interfered with their attendance. Those present were asked to indicate where they were living and what company they were working with. This is set forth below just as it was presented at the meeting. William Arnold, XV, is living in Canton and representing on his own several electronic companies. Sam Caldwell, VI-A, living in Watertown, is a professor in electrical engineering at M.I.T. David Goldman, VI, lives in Brookline and operates his own insurance company. L. T. Gregory lives in Dorchester and works with the New England Telephone and Telegraph Company. Ben Hampshire, VI-A, is located in Tiverton, R.I., and is vice-president of the Montaup Electric Company. Bob Hodson, II, resides in Stoneham and is working with New England Power. Jim Howard, II, is living in Canton and employed with the Clifford Manufacturing Company. Henry McKenna is living in Needham and is employed with the Employers' Group in insurance.

Ed McLaughlin, I, is working for Stone and Webster and living in Melrose. Frank Mulcahy, VI, is with Jackson and Moreland Company and is living in Lawrence. Fred Rice, I, lives in Natick and is working with the U. S. Army Engineers. Harold Robichau, I, is also with Stone and Webster residing in Beverly. Ken Robie, I, is superintendent of the Brookline Water Department and resides in that town. Wally Squire, II, is living in Natick and working for the Hemphill Manufacturing Company. Ave Stanton, XV, and Wally Westland, I, are living in Natick and Needham, respectively, and operating Cummins Diesel of New England, Inc. Frank Turnbull, II, is living in Milton and working for the engineering firm of Fay, Spofford and Thorndike. Courtenay P. Worthington, I, is living in Dedham and with the Mutual Farm Underwriters. Mac Levine II, is living in Worcester and operating the Webster Spring Company at Webster and Worcester, Mass. Last, but not least, Wilbur Colby, I, is living in Beverly, and is also associated with Stone and Webster.

Notices of this meeting went out to those in the New England area excluding the State of Connecticut, and from the replies we obtained, it is apparent that the local '25 people can spread themselves out completely on any given night. Clarence Thulin was in Buffalo, Don Taber in Chicago, Chester Currier in Central New York State, Arnold Bailey on the West Coast, Bob Ashworth was attending the Alabama Cotton Manufacturer's Meeting in Biloxi, Miss., your Secretary was in Washington D.C., while Fred Greer was

leaving for a month's trip to South America. Ken Lucas was unable to attend since, in addition to his regular work, he is teaching at Northeastern University on Thursdays while Ed Kussmaul picked our meeting night to coincide with the day on which he had Open House at his new place in Norwood, Mass.

As special guest of the Class of 1925, we had executive vice-president Lobdell '17 of the Alumni Association. The speakers of the evening were Dr. Julius A. Stratton '23, Vice-president and Provost of the Institute and Mr. Donald P. Severance '38, Secretary and Treasurer of the Alumni Association. Dr. Stratton gave some most interesting insights into the happenings at M.I.T. during the past 12 months while Don Severance told the group about 1925 participation in alumni activities and showed those present the punched cards now available with the Alumni Association for each alumnus indicating that in the case of those present actually each card presented the portrait of the gentleman. Following the formal talks, the meeting was opened to question and discussion, and both Dr. Stratton and Mr. Severance answered questions for some time.

I believe it will be of interest to the members of the Class to know which members of the 1925 group are active in alumni affairs and Don Severance has supplied me with the following data. Educational Council Members, Honorary Secretaries: Benjamin A. Oxnard, Denver, Colo.; Donald A. Henderson, New York City; Richard P. Price, Erie, Pa.; Charles M. Boardman Pittsburgh, Pa.; Edward R. Harris, Lynchburg, Va.; Augustin N. Valdes, Mexico City; and Glen L. Bateman, Johannesburg, South Africa. Educational Counselors: Frank D. O'Neil, Chicago, Ill.; A. Foster York, Chicago, Ill.; and Arthur G. Hall, Wauwatosa, Wis. Members of various visiting committees at the Institute are: T. J. Killian, Department of Electrical Engineering; Arthur F. Merewether, Department of Meteorology, and Donald A. Henderson, the Departments of English and History.

Club Officers of the Class of 1925 are as follows: George Conway, Albany, N.Y.; Alexander Brown, Cincinnati, Ohio; Bob Ashworth, Fall River, Mass.; Joseph Russell and Albert Goleman, Houston, Texas; Augustin M. Valdes, Mexico City, Mexico; M. Kametani, Tokyo, Japan; and Horace E. Wehmiller, Washington, D.C.

May we call to your particular attention the fact that Don Severance has invited the Class of 1925 to attend the Alumni Council Meeting in November of 1953. All those present at the class meeting will receive a reminder of this meeting with details. Any others who may be interested in attending this alumni council meeting should drop your Secretary a line so that they may be included on the list receiving a notice of the meeting.

You should be interested in a letter addressed to President Ave from Cushing Foss. It is quoted in part as follows: "Receiving your real news letter of April 10 certainly made me wish I could be with you April 16 — I shall try for June 15. And what could keep an interested '25 man away from such a program? No, not business, but politics. Being re-elected to

the Cranston City Council, I picked the tough job of practicing all I learned from Professors Shell and Shugrue to handle a \$4,500,000 budget. Our big meeting is as you might guess — April 16."

As an immediate result of Ave Stanton's class letter, I have received a note from Karl Van Tassel whom I mentioned a month or so ago as having his picture in *Life* magazine. Karl states that as to personal news about himself, he is now in the Knolls Atomic Power Laboratory working on a job which is "out of this world" in many respects; namely, the General Electric Company's participation in the atomic powered submarine. It is a fascinating project and he is thoroughly enjoying it. Karl quite modestly fails to state his important position in this program: namely, that of General Manager of the Operating Department of the Knolls Atomic Power Laboratory.

It should be noted that Wally Squire and Ave Stanton have, for the past several weeks, been wearing out the seats in the Town Hall at Natick, Mass., where they, as Town Meeting members have been trying to keep the budget of the town of Natick from getting out of hand.

The following item was gleaned from the Worcester Mass., *Gazette* a couple of months ago indicating that George E. Mason, II, has been elected a director of the Russell Harrington Cutlery Company of Southbridge, Mass.

On a more serious note, we are sorry to announce the death of Edward L. Patton, XV, in July of 1952. He was with the Pittsburgh Plate Glass Company in Pittsburgh, Pa., at the time of his death. — F. LEROY FOSTER *Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

• 1926 •

This month we have two unpleasanties to report — two of our classmates have succumbed to heart attacks within two days of one another. A short death notice in the Boston *Herald* reported the death of Horace M. Bush of Cleveland on March 15. Upon seeing this notice our class treasurer, Pink Sa'mon, immediately wrote a friend of his at the National City Bank of Cleveland, where Mac Bush worked, and confirmed that it was our classmate and that he was taken very suddenly. Any of you who know Mrs. Bush and wish to write her can address her at RFD, Grove Road, Minter, Ohio.

The other misfortune that we must report is the death of Colonel L. M. Littlefield who died suddenly at his home in Longmeadow, Mass., on March 16. Lloyd was superintendent of power and maintenance at the Fisk Tire Division of the U. S. Rubber Company plant in Chicopee Falls, Mass. Lloyd had a military career with 26 years of active and reserve duty and during World War II commanded an ordnance ammunition depot in England and was in charge of demolitions on the Normandy beachhead after the Allied invasion. For the Class of '26 we express deep sympathy to the relatives of these two classmates.

The spirit moved one of our good classmates to such an extent recently that if we published his letter in entirety it would be the class notes for the month. Johnny Drum came to life out in Muncie,

Ind., and without further ado we will give you excerpts from his fine letter. "First, let me remind you to get a good first-hand report of the party which I was unable to attend in Rye, N.Y., on March 6. It was the 50th birthday celebration of the Kelly twins. From the advance notices and the lack of details to date, it must have been a howling success. The list, I understand, included Dave Shepard, so you may be able to get some accuracy.

"I was able to get to Chicago to attend a similar celebration for another and even earlier old friend recently. I spent a week end visiting at the same home with Jim Drain and his fairly recent bride who had come from Galt, Ontario, for the occasion. They had traveled there via a circuitous route which, in three weeks, had taken them to British Columbia, down the west coast and to Mexico and thence to Chicago via Texas and Pittsburgh. Jim claims it was business, but I insisted he was a bit off his Canadian beat. Jim's children, Ann, 15, and David, 11, are now living with Jim and Betsy. . . .

"Jim is now president of the Joy Manufacturing Co. of Canada and seems to be entirely independent of the home office boys, including Ray Mancha. Jim looks most fit, in spite of the approaching half-century mark which will be reached by him on our joint birth date in October. He still considers me immature because of my one year lag. I enjoyed the best visit I've had with the other half of the Drim-Dram combination in a long while." And here comes the prize paragraph. "We have for the past year or so been taking courses in drawing and painting at the Ball State Teachers College which is just across the street from us. I cannot claim to be accomplished, but I have acquired the title of 'Grampa Moses' from some of my less respectful contemporaries. It certainly has proven a diversion from the strains of latent heats, b.t.u.s, sheet metal developments and budget balancing to which I am daily exposed at Glascock Brothers Manufacturing Company where I struggle for the daily bread." Who would believe it! Johnny Drum an artiste — we are wondering about the beret and smock. Seriously though we think it is wonderful.

"We are still enjoying the small city living which we chose after being weaned away from the metropolis of Chicago by five years in the service. I don't think either of us could stand the pace again, nor would we want to. All the thrills and the tortures of living are with us in our environment, but one can escape from them all pro-tem in a matter of minutes rather than in hours; and the subway or commuter trains are not involved." Johnny, we say check and double check.

"We spent last August at a boyhood stamping ground of mine at Wauwinet on Nantucket where an old Techite Bob Backus'31 holds forth. Our trip was extended for nearly six weeks by a most convenient strike the boys pulled in our plant. So we did again all the things which salt-water proximity proffers. It brought back the happiest days of my experience, and the children ate it up. It won't be just the corn fields and the tomato patches and fresh water for them either." Many, many thanks, Johnny for

this excellent contribution to the class notes.

The other evening while reading the Boston *Traveler* going home on the commuters' train we read a little story about classmate, Jim Bamford, which was so good we are going to quote it verbatim. "Baldy Has Hopes of Growing Hair; He's Stumped — Mayor James B. Bamford, who says he's been as bald as an Easter egg for 20 of his 45 years, has new hope today for a crop of fuzz — or something better. Bamford said he had received from Donald S. Gates, an Albright professor, a 'sure cure' formula for baldness uncovered by Gates in thumbing through a book published in 1742. The formula's ingredients: 2 ozs. of boar's grease, 1 dram (about 60 grains by present apothecary weight) of ashes of burnt bees, 1 dram of ashes of southern wood, 1 dram of juice of white dilly root (the dilly is a small hardwood tree found in Florida), 1 dram of oil of sweet almonds, and 6 drams of pure musk. 'I think I can get hold of those other things,' said Bamford, 'but what's worrying me are those burnt bees.'" This formula certainly leaves no doubt in one's mind that it is "sure cure" for baldness, but there seems to be one serious omission. We think if it said "Take internally," the guaranteed results would be obtained much faster.

On a recent trip to Wilmington, your Secretary was scheduled out of the New Castle, Del., airport on a flight to New York, thence to change and on to Boston. I rode to the airport with one of our vice-presidents, Mr. Warren Kinsman, who was flying to New York on the same plane for an important meeting. Upon checking in we were told that the plane was 30 minutes late so we decided to have a beer only to have the loudspeaker system announce in a few moments that the plane would be two hours late. Mr. Kinsman made a couple of 'phone calls, found that one of the company planes was in town and arranged to have the pilots warm it up to take us to New York. Upon returning to the ticket counter to check out I found Cecil Ogren getting the bad news about the late plane and Mr. Kinsman asked him to join us. We had a nice flight together to New York and caught the Boston plane on which we originally were scheduled. Cecil is civilian procurement officer at the Watertown Arsenal and had been at the Aberdeen Proving Ground witnessing some gun tests about which he had nothing to say. However, from what we have been reading in the newspapers recently, I am sure it was no peashooter.

From the comments and notes your Secretary receives from various classmates outside New England, especially those who once lived here, the little stories we tell from time to time about current New England seem to create a certain amount of nostalgia. Many of the boys are already beginning to think about obtaining a little white house with a fence around it in some quiet New England village that they can start fixing up with the thought in the back of their minds of eventual retirement. Therefore, we are going to offer to be of any assistance we can to any classmates who have such thoughts in the back of their minds, no matter how vague. If

it strikes enough of you as being a good idea your Secretary will, from time to time, write up the advantages and disadvantages of certain New England towns and areas which might save you a lot of time when you are here for just a short vacation.

To give you a little idea of what we are driving at, Massachusetts happens to be a rather poor place for anyone to live whose income is derived from dividends due to a rather healthy tax on unearned income. In spite of this, many people like it well enough, particularly on Cape Cod and Cape Ann to be undeterred by this tax. Local taxes can also be very annoying, for example Gloucester and Rockport adjoin one another, but if there were two identical houses in the adjoining areas, the one in Gloucester would carry double the tax of the Rockport house. There are also colonies of interesting people that have located in various parts of New England which make these sections very desirable places to live. As we said above, if any of these things are of interest just drop a note to your Secretary and if there are many replies we will start making a survey of various spots in the New England area where it would be nice to live.

From the looks of the accumulation we have made here thus far in these June class notes, it appears that to say any more would be to usurp the space of another Class. So we will hold our remaining material until the July issue. Hoping to see many of you on Alumni Day, cheerio. — GEORGE WARREN SMITH, *General Secretary*, E. I. du Pont de Nemours and Co., Inc., Room 1420, 140 Federal Street, Boston, Mass.

• 1927 •

The following information has been received from Herb M. Houghton: "I was transferred from Calgary back to the headquarters office of Amerada last July. However, after seven months of trying to become reacclimated as an 'Okie' I decided that the Indians can have Oklahoma. I resigned from Amerada effective February 1 and returned to Calgary to enter the contract phase of geophysical exploration. Since our former residence in Calgary had been sold, you can imagine the pangs I am going through attempting to find reasonably priced and attractive real estate, under boomtown conditions. At present I am contemplating finding an architect who knows how to design a New England Cape Cod cottage and building a place. I will have to admit that building doesn't appeal to me particularly after listening to friends tell about the trials and tribulations of incumbent home owners." Herb is now with the Geophysical Prospecting Company, Canada Limited, 411 Sixth Avenue West, Calgary, Alberta.

The Pawtucket-Central *Times* recently announced that Louis F. Eaton, Woonsocket Division Manager of the Blackstone Valley Gas and Electric Company and formerly with the Pawtucket division of this utility, has been named operating vice-president of the Brockton Edison Company. He is president of the Woonsocket Chamber of Commerce, director of the Community Chest and active in other civic circles in that city. He is also a direc-

tor of the Charles A. Eaton Shoe Company of Brockton and a trustee of the Goddard Memorial Hospital there. — JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, 50 West 50th Street, New York, N.Y.

• 1928 •

The list of members of our Class who have signed up for the reunion is growing. The sum total as of April 28 when these notes were written is as follows: 83 men, 58 women, 21 boys, and 23 girls. Here are the reunioners to date: Gil Ackerman and wife, Elwood Anderson, Arnold Archibald, Bill Bendz and wife, George Bernat, wife and two sons, Carl Bernhardt, Bill Birch, wife and daughter, Dave Bradshaw and wife, Hank Buntschuh and wife, Bunny Burnell, Arthur Campopiano, Vin Caputo, wife and two daughters, Bill Carlisle, Chris Case and wife, Jack Chamberlain, wife and daughter, George Chatfield, wife and daughter, Dud Collier, wife and son, Gordon Collins, wife, son, and daughter, Joe Collins and wife, Bob Cook and wife, Al Dempewolff and wife, Gab Disario, wife and daughter, Dave Donovan, Jim Donovan, wife and two sons, Huyler Ellison and wife, Newt Foster, Don Francis and wife, Don Fraser, wife and two sons, Carney Goldberg and wife, Bill Gorfinkle, Bud Gray and wife, Bob Harbeck, wife, son, and daughter, Thurston Hartwell and wife, Roger Haven, Ames Hettrick, John Houps, wife and two sons, George Hubbard and wife, Stan Humphrey, wife and son, Harlan Jessup and wife, Ralph Joje, wife and two daughters, Art Josephs and wife, Bob Joyce and wife, Bob Kales, Don Kennedy, Max Kessler and wife, Pete Kirwin and wife, Mark Kolligian, wife and two daughters, Nap LaCroix, Tommy Larson, wife, son and daughter, Lou Miller and daughter, Hank Moggio, Bill Murphy, Carl Myers and wife, Bill McClintic, Frank McDermott, wife, son and daughter, Jerry MacGillivray, wife, son and daughter, Art Nichols, Noel Olmstead and wife, Walt Oser and wife, Karl Otte and wife, Olap Palo and wife, Ken Peterson and wife, Ed Poitras, wife and son, Hal Porter, wife and son, Johnny Praetz, wife and daughter, Jim Rae, wife, two sons and daughter, Johnny Reynnders and wife, Claude Rice and wife, Charlie Richheimer, wife and daughter, Dick Rubin, John Russell, wife and daughter, Rene Simard and wife, Rudy Slayter, wife, son and daughter, Walt Smith, wife and daughter, Charlie Southwick, Don Sturznickle, Herm Swartz and wife, Jim Ure, Jim White, wife and two daughters, Bob Wise and son, Ray Wofford and wife, Abe Woolf, wife and two sons, Charlie Worthen.

Here's hoping this is only a small portion of the final showing of the Class. We know of many members who as yet have not sent in their reservations but who are planning to come. It would be of great help to your committee if as many who can will rush their reservations through so that all of the work can be done to make their participation in this 25th reunion a memorable and happy one.

Bill Carlisle certainly is heading up a hard working committee which is striving to meet the wishes and desires of all re-

unioners. Walt Smith and Herm Swartz are working long hours on the Class Book which promises to be the biggest which any Class has brought out.

Let's set an all-time attendance record for a 25-year reunion. There will be fun for you, your wife, and children over 10. Come back to Tech and see what 25 years have done to it. Come back and let us see what 25 years have done to you. Looking forward to seeing you at our 25th. — GEORGE I. CHATFIELD, *Secretary*, 49 Eton Road, Larchmont, N.Y.

• 1932 •

Your Secretary has had some rewarding correspondence this month, also some disquieting news from Tom Sears that only 20 per cent of our Class gets *The Review*. The figure is based on the total class roster as kept by the Institute, which includes transfers, graduates and special students, and hence based on the figure for regular graduates, the percentage would be near 40 per cent, which still seems low to me. I am wondering if there would be any of us who would be willing to subsidize for a year, two or three subscriptions to members of our Class who have not got *The Review* to see if we could build up greater interest in the Class and in Tech. Write me if you like the idea.

I have heard great things about Tom Smith, one of our more serious XV men. Tom has been made vice-president in charge of Research and Development for the Maytag Company at Newton, Iowa, the enterprising makers of washing machines, refrigerators, stoves and other household appliances. He has been with Maytag, after a brief stint with his father in construction contracting, since graduation, taking over direction of the Research and Development Department in 1938. I missed learning of Tom's family status, but assume, like most of us, he is married and has four or five children ranging in age from two to 16. Congratulations, Tom!

I am feeling very, very sorry for Bill Barker. He has just returned from a three-weeks' trip to Nassau. Apparently the boat trip was rough—it rained all the time he was there and nobody spoke any English. Also he ran into George Falk, relaxing from his arduous responsibilities as president of the Independent Lock Company, Fitchburg, Mass. George was made president in 1949 when his father became Board Chairman. According to my information, George's father really put him through the works before handing him the baton. Incidentally, George had a busy and active time during the War, ending up as a major in the Ordnance Department in charge of Inspection Department of the Gage Division at Frankford Arsenal. He has a boy, David, 15, probably by now an expert at picking any kind of lock devised, and a daughter, Marilyn, 12. Congratulations to you, George.

To get back to hard luck Bill Barker, I have wormed a biography out of him as follows: "From 1932 to 1942 I was with Firestone Tire and Rubber Company in various sales capacities. In 1942 after trying for a commission and finding that my eyesight was only good for gazing at blondes (Editor's note — No change from

'29 to '32), I went to work for Uncle Sam as the mileage rationing administrator for the State of Rhode Island in the much maligned OPA. Tires, gasoline, automobiles and bicycles were handled by my office. Believe me, it was quite an experience. Since 1945 I have been associated with the Apex Tire and Rubber Company of Pawtucket, R.I., in a sales capacity. Married Lee Stratton of Oxford, N.Y., in 1936. We have one son, Richard, who had his 14th birthday in February down in Nassau in the British West Indies. We spent a delightful three weeks there and recommend the climate most highly. We went down on a cruise boat out of New York and flew back by way of Miami. The only person I saw in Nassau that I knew previously was George Falk whom I bumped into on the street. He and his wife were in Nassau for the day as part of a cruise out of Miami. Had a very interesting talk with George and, as the boat he and his wife were on sailed out of the harbor, my family and I waved 'bon voyage' from the Prince George pier. As a result of this chance meeting I called on George the next time I was in Fitchburg, Mass., and had another nice visit."

Alex Daunis finished a very successful two years as president of the Tech Club of Rhode Island is now its representative on the Alumni Council. Al married Eleanor Broderick from Jamaica Plain in 1939. After a slow start he is running strong for honors as the largest family man with five fine children — Sandy is 12, Cecil 10, Betsey seven, Steve five and Amy one. Two to go Alex, (see May notes). Al says that he has a basketball team but he likes baseball or even football, but on second thought he says he thinks he'll plan a trip to Nassau instead. The Daunis estate is at 11 Nayatt Road, Barrington, R.I. Al seems to turn to jewelry. After spending a few years with the Hadley Company, he is now the plant manager of Flex-let in East Providence who make very fine expansion bands for wrist watches.

Art Lowery is manager of sales for Wyman-Gordon Company, makers of automotive and aircraft forgings in Worcester, Mass. He lives with his wife and three children at 12 Beechmont Street, Worcester 9, Mass., and keeps himself busy in numerous civic and association activities and by playing tennis and skiing. Art was a lieutenant colonel in the Air Force during the War.

Mac (J.L.) MacDonnell lives not too far away at 183 Hopkins Place, Longmeadow, Mass. He too is in sales as assistant general sales manager of Gilbert and Barker Manufacturing Company, West Springfield, Mass., manufacturers of service station and oil heating equipment.

We have discovered we have another top-notch educator — Tom Mackesey, who is dean of the College of Architecture at Cornell. We will have to recognize, though, that Tom is one of the three or four Democrats on the class list and accordingly, be on guard. Perhaps his wife, Eloise Ross, who is a law school graduate, provides balance for their four children, John Ross, 10, Paul Ross, eight, Thomas Ross, six, and Patrick Ross, two. At least she is not letting the name Mackesey overwhelm things.

Art MacKusick communicates from Logan, Utah, where he is a lieutenant colonel in the Regular Army. He is director, Ordnance R.O.T.C. Unit, U.S.A.C. there, living at 145 N 2 E Street, with his wife and two children. Another defense man is Brigadier General Edward P. Mechling, Commanding General, Air Force Armament Center, Eglin Air Force Base, Florida.

We saw Art Marshall at last year's reunion and found him just as full of energy as ever. Perhaps his wife, Rebecca M. Malkin, a Sargent girl, keeps him in shape with regular setting up exercises. Art is in the transportation business for himself; has two boys, David, 18, and Richard, 14, and keeps busy in numerous civic and club activities, including Boy Scouts, Y.M.C.A., P.T.A., and so on. Good citizen, Art!

Bob McCaa writes from Glenside, Pa., where he lives at 223 Harrison Avenue, with his wife and two children. He is head of Engineering Scheduling Center for Minneapolis-Honeywell Regulator Company — Brown Instrument Division.

We have two Socony-Vacuum Oil men to report this month. Ed McLaughlin is a mechanical engineer, living on Woodland Drive, Pleasantville, N.Y., with his wife, Eleanor Dunning, and three children. Ed reports that he has limited his hobbies to keeping the Scotch consumption ahead of imports. Harry Moore, Pheasant Lane, Greenwich, Conn., manages Socony-Vacuum's Wholesale Division. He sails on the side (ketch rig); also serves on the Board of Greenwich Taxpayers' Association, for obvious reasons.

I have a feeling this June issue will be the last one for the summer months. Please, anyone reading this with something to tell me, write — next year I want a lot of interesting material. Good wishes for the summer! — ROBERT B. SEMPLE, Secretary, Box 111, Wyandotte, Mich. Assistant Secretaries: WILLIAM H. BARKER, 45 Meredith Drive, Cranston, R.I.; ROLF ELIASSEN, Room 1-153, M.I.T., Cambridge 39, Mass.

• 1934 •

Vincent Rother, who is a prominent architect in Montreal, recently participated in a panel discussion at the McGill Conference on Construction Industry Integration. Edward B. Locke, Jr., has been appointed chief engineer of the Continental Screw Company and the Hy-Pro Tool Company of New Bedford, Mass. Ed served on the staff of General Courtney H. Hodges of the First Army during the European campaign and in the Pacific theater during World War II. He formerly was superintendent of the Progressive Manufacturing Company of Torrington, Conn. Mr. and Mrs. Locke and their six-year-old son, Edward, 3d, are living in Fairhaven, Mass.

E. Philip Kron has been appointed purchasing engineer at Eastman Kodak Company's Kodak Park Works. Phil joined Kodak after graduation and worked first in the accounting division and then in the engineering division as assistant to the superintendent. From 1942 to 1947 he served as an air force officer. He then became a partner in a sales engineering firm in Buffalo and a director of Dustex Cor-

poration, manufacturers of industrial dust prevention equipment. He rejoined Kodak in 1950 as a member of the purchasing department specializing in mechanical equipment.

John T. Burwell, Jr., has collaborated with Ernest Rabinowicz of the M.I.T. staff on an article entitled "The Nature of the Coefficient of Friction," which appeared in the *Journal of Applied Physics* in February. Hoyt P. Steele, President in charge of engineering and research, Benjamin Electric Manufacturing Company, Des Plaines, Ill., has been elected a vice-president of the National Electrical Manufacturers Association.

Jerry B. Minter of Measurements Corporation was a recent speaker at a symposium on amplifiers, presented by the Audio Engineering Society in New York on February 17. Ken Dorman has been appointed chief chemist at Goodall Sanford Company of Sanford, Maine. H. Neal Karr of the Singer Manufacturing Company has been transferred from the Bridgeport Works to a position as works manager of the Singer plant at St. Johns, Province of Quebec, Canada.

Professor John A. Hrones of the Mechanical Engineering Department at M.I.T. recently gave a talk at the Wilmington, Del., section of the A.S.M.E. on the application of fundamental dynamics in engineering fields as a check against error. J. J. Jaeger, Assistant Manager of engineering for the Pratt and Whitney Division of Niles Bement Pond Company of West Hartford, Conn., recently gave a talk before the Fairfield County Chapter of the American Society of Tool Engineers on "Recent Developments in Machine Tools."

G. Roy Fugal has been appointed manager of employment practices of the General Electric Company. He will direct the Company's program affecting 123 plants located in 95 cities throughout the country. He will make his headquarters at 570 Lexington Avenue, New York. He is a member of the faculty at Yale University and a well-known lecturer on industrial relations. He holds degrees from Yale, Harvard, and Brigham Young University, as well as from M.I.T.

King Crosby has been appointed assistant general manager of the Huntington, West Virginia, Works of the International Nickel Company. He joined the company in 1936 as a metallurgist and successively became combustion engineer, assistant to the general manager, superintendent of production, and general superintendent. Eric J. Isbister has been made a fellow of the Institute of Radio Engineers. Eric, who is head of the radar engineering department of Sperry, has been with the company since 1934. He started as a tester in the Marine Compass Test Department and became a junior engineer on searchlights in 1937. He was promoted to assistant project engineer in the radio laboratory in 1940 and became a project engineer in 1941. In 1942 he became a research engineer and assumed responsibility for several projects which were later to be combined under the Radar Engineering Department. His current interest centers around radar and loran projects.

Walter McKay in collaboration with two other beavers, Charles S. Draper '26 and

Sidney Lees '48 has written a book entitled *Instrument Engineering*. It is published by McGraw-Hill Book company in three volumes. Francis G. Jenkins has been named director of purchases for the Sprague Electric Company of North Adams, Mass. He was formerly an executive in the purchasing department of the Ford Motor Company of Dearborn, Mich., and before that was with the purchasing department of the Eastman Kodak Company.

Elizabeth Close, nee Scheu, is part of a husband-and-wife team of architects with her husband, Winston Close, in Minneapolis, Minn. The team has designed such homes as those for John Rood and Lyndon King and a number of housing projects. In addition to architecture, Mrs. Close finds time to bring up three children, play a cello in a chamber music group and follow several other hobbies such as swimming, chess, and skiing.

Dean Dadakis was married in Baltimore on November 27 to Miss Margaret Anzmann, daughter of Mr. and Mrs. Edward L. Anzmann, Jr., of Baltimore. Lewis H. D. Fraser was married to Anne Strother Kirk of Chicago on December 14. William E. Dobbins was married in December to Norma Nilsen, daughter of Mr. and Mrs. Nils A. Nilsen of Brooklyn, N. Y. Bill is an associate professor in the College of Engineering at New York University. Lieutenant Colonel Robert R. Roulston is now the proud papa of a five-months-old boy, Dave. Bob and Barbie are living in Redlands, Calif., about 60 miles east of Los Angeles. Bob is trouble shooting on procurement for the Air Force and does a lot of traveling around the country. — JOHN G. CALLAN, JR., Secretary, 184 Ames Street, Sharon, Mass.

• 1938 •

From Dallas, Texas, comes the announcement of the engagement of Miss Marilyn Berry to Jack Crichton. The news is obviously a bit delayed for the wedding was set for December 6, 1952. We also have the announcement of the wedding on November 29, 1952, of Miss Doris Jane Healey to Murray Hayward in Quincy, Mass.

A card from T. Y. Shen says "Your card postmarked December 5, 1952, has been here for some time. Sorry I could not return it to you sooner as I have just returned from Formosa recently. I guess I do not have much to contribute to you in the way of news about myself. I may qualify to claim as one who travels a great deal. During the past year, I was out in Formosa twice and on each trip, I circled around the world once. Now I am looking forward to the Class Reunion — provided that I don't go away again at that time."

Tony Smith writes "Keep busy but happy! Still with Stone and Webster — Assistant Superintendent of Construction. Finally going to be able to get going on dam at Roanoke Rapids, N.C. (See *Readers Digest* for January) what with Supreme Court approval. Two kids keep us busy at home, girl, seven, boy, four. I'm president of Central Virginia Engineer Club. Some 450 engineers of various degree — also vice-president of my church — also will be most happy when my terms expire!"

Several members of the Class have been in the news recently. Eric Reissner has published two papers, one "A Problem of the Theory of Oscillating Airfoils" appeared in the *Proceedings of the First National Congress of Applied Mechanics*. The other "On Non-Uniform Torsion of Cylindrical Rods" was printed in the *Journal of Mathematics and Physics*, October, 1952.

Newton Hammond, Jr., has been appointed Chief, Warehouse Section, Iron and Steel Branch of the Office of Price Stabilization, Washington, D.C. He has been manager of Tube Sales, Peter A. Frasse and Company, Inc., Philadelphia, Pa., since 1941.

Paul J. Sullivan, Vice-president of the E. F. Hodgson Company, Inc., has been elected to the company's board of directors. In Somersworth, N.H., General Electric has recently appointed Arthur Gold general foreman, Machine Area, Aircraft Instrument Manufacturing.

Albert M. Stone has been elected as a member-at-large of the General Committee of the Philosophical Society of Washington. He is a physicist with the Applied Physics Laboratory, of the Johns Hopkins University, in Silver Spring, Md., which is engaged in guided missile research and development for the Navy Bureau of Ordnance. — **ALBERT O. WILSON**, *General Secretary*, 24 Bennington Road, Lexington 73, Mass., *Assistant Secretaries*: **DAVID E. ACKER**, 210 Woburn Street, Lexington, Mass.; **FREDERICK J. KOLB, JR.**, 211 Oak Ridge Drive, Rochester 12, N.Y.; **RICHARD MUETHER**, 116 West 67th Terrace, Kansas City, Mo.

• 1939 •

A few news items have come in which should be of interest to the Class. First of all we hear that George Mitchell has been appointed a group leader in the Research and Development Department, Olin Cellophane Division, Olin Industries, Inc., Stamford, Conn. He was formerly with the B. F. Goodrich Company. He will work on the preparation and evaluation of coatings for cellophane. William B. Kempton has been appointed sales manager of the hardware products department of the Wickwire Spencer steel division of the Colorado Fuel and Iron Corporation. He served four and a half years as a pilot in the Air Force during the War.

News comes that Dr. John R. Brown, Jr., has been appointed a vice-president of the Lambert Pharmacal Company Division of the Lambert Company. He has been director of research since 1949. Donald L. Herr has been elected president and director of American Electronics Manufacturing, Inc., Los Angeles, Calif. He did advanced work with our Class after graduating from the University of Pennsylvania in 1937.

Your Boston representative had lunch with Ernie Kaswell the other day. He is president of Fabric Research Laboratories, Inc., of Boston. They are a large research organization specializing in textile problems. He has just finished writing a book that is being published by Reinhold Publishing Corporation entitled *Textile Fibers, Yarns, and Fabrics*.

Norman Taylor talked on the "Rudiments of Good Circuit Design" at the

symposium of 1953 Electronics Components. He is in charge of electronic development, Digital Computer Laboratory, M.I.T. George Beesley, your Boston representative, was recently appointed comptroller of Angier Products, Inc., Cambridge, Mass. We had a note from Irving Peskoe who is a Major at MacDill A.F.B., Fla. Their third child, Anne, was born on March 16, 1953, the same day his wife celebrated her birthday and also their 12th wedding anniversary.

We would like very much to hear from John Beaujean. If anyone has seen him or knows his current address, we would appreciate hearing from you.

Hal Seykota and Wiley Corl share the spotlight for noteworthy events during recent months. Hal was named Honorary Secretary for the Oregon Section of the Educational Council and Wiley announced the birth of his fifth child, a boy. It will be recalled that these gentlemen were buddies and Phi Sigs in '39; today both are product sales managers. Hal is with Portland Gas and Coke Company, and Wiley is with J. V. Calhoun Company in Philadelphia.

Seykota writes that he has visited Al Laker, Woody Baldwin, and George Cremer, all living on the West Coast. Al, a bachelor, is in building and construction, lately doing a hotel and casino in Las Vegas, Nev. Woody is with Rand Associates, that important non-profit research group handling government contracts. Hal did not mention George's company affiliation but he did point out that there were four children.

At this writing, plans were announced by the Philadelphia M.I.T. Club for holding another Annual Meeting at the DuPont Longwood Gardens in Kennett Square, Pa., on May 9. The event was held there in 1952 and it is believed that it was one of the most magnificent Alumni Club meetings ever held. Mr. Lammott DuPont '01 was host to over 600 guests who were entertained in the fabulous indoor gardens. Classmates who enjoy raising flowers are urged to visit Longwood which is open Saturdays and Sundays until 5:00 P.M.

The 15th Reunion is 12 months off. During the summer Doc Wingard will consult with his staff to formulate the plans which, to date, include tentative overtures to Oyster Bay. Wherever the reunion is held, we anticipate the turnout of 1939 plus the many who were conspicuous by their absence. In '54 we hope to round up the absentees and exceed the 110 or so who came to Plymouth. It has been suggested that classmates on the West Coast start a \$500.00 Reunion Fund now instead of an Xmas Club to cover round trip expenses for two to Boston in '54. — *Assistant Secretaries*: **GEORGE BEESLEY**, 38 Homestead Road, Lynnfield Center, Mass.; **MICHAEL V. HERASIMCHUCK**, P.O. Box 495, Bethlehem, Pa.

• 1940 •

The news this month is about two associate members of our Class. Phil Wheelock was elected to the Uxbridge, Mass. School Board in February. He is assistant treasurer of the Stanley Woolen Company. Louis Strymish has been appointed instructor in the Leather Engineering De-

partment at the Lowell Textile Institute. Previously he was plant chemist and consultant for Geilich Tanning Company in Taunton, Mass. The only direct contact your Secretary had with a classmate this month was in a business letter from Peggy Dienes. Sorry the column is so short this month. If you would like to see a longer one, YOU should write to Al. — **ALVIN GUTTAG**, *General Secretary*, 7814 Marion Lane, Bethesda 14, Md. **MARSHALL D. MCCUEN**, *Assistant Secretary*, Oldsmobile Division, General Motors Corporation, Lansing 21, Mich.

• 1941 •

One of the biggest attractions at the display of new inventions held at the John Hancock Building in Boston in February was Calvin MacCracken's pillow pad kept cool by circulating water, called a "chillow." The display was sponsored by 25 companies associated with the American Research and Development Corporation, one of which is Jet-Heat, Inc., of Englewood, N.J. After working for General Electric for five years, Calvin started Jet-Heat in 1946, and now employs 25 people. While working on their first product, a jet-heat heating system, he began thinking about a device to keep people cool on hot nights. The system as now developed circulates water from a container under the bed through tubing into a thin plastic pad placed inside the pillow slip, and from there back to the container. Production was scheduled to start in April, and the cost is \$14.95. Get yours before the hot weather sets in.

Once again, Alumni Day is upon us, and we hope that as many of you as possible will be on hand. The date: Monday, June 15. — **IVOR W. COLLINS**, *General Secretary*, 28 Sherman Road, Greenwood, Mass. **JOHAN M. ANDERSEN**, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

See note on page xxiv — Ed.

• 1942 •

Congratulations are in order to Ken Leghorn. We received the following announcement from Sun Tube Corporation: "Kenneth M. Leghorn, Executive Vice-president of Sun Tube Corporation, Hillside, N.J., has been elected president of that Company. He succeeds R. Smith Schenk, who has announced his retirement. Ken joined Sun Tube in 1947, and has successively held the positions of Director of Research, Assistant to the President, Vice-president, and Executive Vice-president." Also recognized for outstanding achievement is Graham Bell. The Philco Corporation sent an announcement which reads as follows: "Graham Bell, a Group Engineer with Philco Corporation in Philadelphia, received one of the Company's annual Achievement Awards from Leslie J. Woods, Vice-president of Research and Engineering. The Achievement Awards were established at Philco to extend recognition to members of the research and engineering division for exceptionally meritorious achievement in the performance of their work during the year. . . . Mr. Bell has been with Philco since June 2, 1952. . . ."

Who would have thought that asking classmates for dues would turn out to be

a very effective way to get caught up on news, but sure enough, along with the \$194.00 collected so far, we've had lots of regards, best wishes and up-to-date information on class members' activities. Howard Evans has sent us a long letter which we should like to quote in full: "I guess it's about time that I give you some hint of our whereabouts and doings. I have been working for the Geochemistry and Petrology Branch of the Geological Survey for just over a year, and I like it so well that it looks as though we will be located in the Washington area for some time to come. The work is primarily crystal chemistry and crystal structure analysis in connection with an AEC contract, and involves some field work in Colorado. I arrived at this almost ideal setup after a two and a half year stretch in an industrial laboratory, which didn't work out so well. I didn't leave M.I.T. until 1949, having completed graduate work the year before. Eloise (nee Humez, also '42) is happily raising two youngsters, Cecily Ruth, age six, and Dana Lawrence, age one and a half. Incidentally, I was surprised to run into Frank Canney recently and find him also working for the U.S.G.S., at the Denver Office.

Word also comes from one of the surprisingly large number of medical doctors, Fred Sargent, II, who writes, "I am on leave of absence from Department of Physiology of University of Illinois for tour of duty with USAF(MC). I have been reassigned to the Department of Physiology to supervise a study on survival rations for the USAF. So-called permanent station is Aero Medical Laboratory, Wright-Patterson A.F.B. My wife is dietitian on the study. We are using eight volunteer students as subjects."

Speaking of doctors, Marty Levene, Resident in Radiology at the Massachusetts General Hospital, has just returned from a four-months' visit to Oak Ridge, Tenn., where he took special courses in Radiology and served as Staff Radiologist for the nuclear research center's hospital. A note from Harvey Kram tells us that on a recent trip to the S.A.E. national production forum he met Frank Herlihy in the club car and found the Herlihy's doing very well. Later on in the trip Harvey ran into Moe Steinberg, who is now Vice-president of a very interesting research organization known as Horizons, Inc. Moe, his wife, and their baby daughter, are living in Cleveland. Alan B. Macnee sent along with his \$2.00 payment this up-to-date summary: Position - Associate Professor of Electrical Engineering at the University of Michigan. Children - Carol, three and a half years, Bruce Forrest, one and a half years. Teaching half time - network synthesis, research half time - application of information theory and circuit theory.

Somewhat belatedly, but with great pleasure, we report the marriage of the former Miss Belle Anita Rost of Kew Gardens, N.Y. and Irving S. Fageron.

Some months ago we reported that Clinton Cook was appointed assistant professor of chemistry at the University of Vermont. Just recently President Carl W. Borgmann of the University announced the receipt of a Frederick Gardner Cot-

trell grant of \$2,000 for a special research project carried on by Dr. Cook. Clinton's work bears the title "Free Radical Reactions of Hindred Phenols."

We received a most interesting clipping from the Los Angeles *Daily News* and are quoting it exactly as it appeared just a short while ago. "That little gray home on the moon came closer to reality today for a bunch of future space travelers when a big-time scientist said 'it's only a matter of time 'til we get there.' Dr. Robert C. Seamans, Jr., Aeronautical Engineering Professor at M.I.T., told M.I.T. club members of Southern California at the University Club: 'From an engineering standpoint we are licking the problems of space travel one by one, and eventually we can lick them all. If we want to achieve space travel, it can be done if we spend enough money.'"

Also taking his turn as a technical speaker was Arthur A. Hauser, Jr., who spoke on "Servo Mechanisms" at a joint A.I.E.E.I.R.E. student branch meeting at Stevens Institute of Technology.

A release from the Hamilton Standard Division of United Aircraft Corporation tells us that Courtenay Crocker and Charles B. Smith are among the large number of Tech men in positions of great responsibility who are making important and very effective contributions to their work.

Through the kind efforts of the Alumni Register we learn that Norman Brown has been appointed professor at the University of Pennsylvania, and that Roswell Austin has joined the Visibility Laboratory of the Scripps Institute of Oceanography at La Jolla, Calif. Other address changes of the month are: Charles G. Beatty to Arcadia, Calif.; Philip J. Bendt to Los Alamos, N.M.; Willard S. Bundy to Bay Village, Ohio; John W. Corbett, Jr., to Danvers, Mass.; Campbell DeMallie to Dedham, Mass.; Major Frederick M. King to Dayton, Ohio, and the Wright-Patterson Air Force Base; David R. Lawler to Rockville; Md.; Franklin P. Seeley to West Hartford, Conn.; Stephen E. Stephanou to Niagara Falls, N.Y.; Harold B. Stetson to Mamaroneck, N.Y.; Warren W. Twaddle to Hammond, Indiana; Alfred A. Tytell to West Point, Pa.; George J. Yevick to East Orange, N.J.; and S. Edward Yoder to Louisville, Ky. - LOUIS ROSENBLUM, Secretary, Polaroid Corporation, 730 Main Street, Cambridge 39, Mass.

• 1943 •

You will be reading these notes about a week or so before our grand and glorious get-together at the 10th Reunion of our Class. The week end of June 12 to 14 at the Mayflower Hotel in Plymouth, Mass., promises to be magnanimous, as many of you know from the reunion literature you have received. For the benefit of those who will be traveling from distant places, here is some information on transportation. First, our transportation chairman, Professor Ken Wadleigh, will be at M.I.T. on Friday, June 12, to assist those who want rides to Plymouth. If you wish to go by train, the schedules show trains leave South Station for Plymouth on Fridays at 4:38, 5:17 and 6:10 P.M. The trip takes a little over an hour from Boston, by train or car.

If you are driving from New York, take Route 44 from Providence through Taunton to Plymouth. Chairman Jim Hoey, Jr., who expects to arrive by boat on his new 42-foot yacht, says there are adequate anchorage facilities at Manomet Point, where the Mayflower Hotel is located. In any event, festivities start with dinner on Friday evening, June 12.

Your Reunion Committee has planned no scheduled activities for the week end. All the facilities of golf, tennis, swimming, and general relaxation are there for you to take advantage of at your leisure. Elections for class officers will be held on Sunday, at which time the many, many prizes will be awarded.

Now to news from the gang. I received a fine letter from Joe Mestier, who wrote as follows: "I hope I'm not too late, but nevertheless it gives me a great deal of pleasure to convey to you a thumbnail sketch of 'yours truly' since my graduation in 1943. Upon graduation I was, of course, inducted into the Army and attended OCS at Camp Davis, N.C. After obtaining a commission I spent about a year in the States and was then shipped overseas to the Pacific area. In July, 1946, I was fortunate enough to be returned to the good old U.S.A. and, believe it or not, soon thereafter obtained my release from the Army.

"In September, 1946, I joined the Allis-Chalmers Manufacturing Company in Milwaukee, Wis., and spent the next year and one-half on their training program for young engineers. At this point I guess I'm bragging a little bit as I was no young engineer at that time. In the late summer of 1948 I was sent to our New York office as a sales representative, and in December, 1950, I was sent to Syracuse and put in charge of the Syracuse District Office. Since that time no other major changes have occurred, and I have been able to maintain the status quo.

"In order not to be too one-sided about this, I had better tell you a little bit about my family. In November, 1943, I married a Pine Manor graduate beauty, nee Dorothy Dickens. In May of 1945 our first daughter was born, and I might add that I have been able to repeat the same performance on two further occasions, namely in 1948 and again in 1952."

From the New York *Times* we have an article about a Naval Officer classmate, Commander Carl R. Hirschberger, who received his master's degree with our Class. Commander Hirschberger is in charge of the building of the new 60,000-ton carrier, U.S.S. *Saratoga*, at the Naval Shipyard in Brooklyn. He is a 1937 Annapolis graduate, and served in the Pacific during World War II on the cruiser *Boise*, as chief engineer.

The Salem, Mass., *Independent* carried an article recently about Dr. Sidney Kibrick, of the Children's Hospital in Boston, who is doing extensive research work and lecturing on "Polio." We also have a news release about John D. Stanitz, who is in the Compressor and Turbine Division at the Lewis Flight Propulsion Laboratory of the NACA in Cleveland, Ohio, which laboratory is engaged in problems of supersonic flight.

In April, Chris Matthew presented a joint paper at the Spring Symposium of

the American Institute of Chemical Engineers in Boston, on "Markets for Ammonia and Ammonia-Based Chemicals in New England." Chris, who is on our Reunion Committee, is with Arthur D. Little, Inc., of Cambridge, Mass. Also in the research field, John P. Longwell, who received his doctor's degree in Chemical Engineering with our Class, was the co-author of a paper recently published in the March issue of *Industrial and Engineering Chemistry* on "Mixing and Distribution of Liquids in High-Velocity Air Streams."

From Brookline, Mass., I received a card from Gene and Shirley Eisenberg announcing the arrival of their first daughter, Susanne, who was born on March 20. They have two boys, Chuck and Andy, who are very mischievous but likable rascals.

Change of address notices show that Dr. Bob Case is now at the Harvard School of Public Health in Boston; Irene du Pont has moved from West Virginia to Wilmington, Del.; John Gunther is now in Locust Valley, N.Y., and Malcolm Walker has moved from one part to another in Quincy, Mass. Also, for you who may vacation in the Pine Tree State this summer, you'll find Cal Dunwoody at the Quarterdeck in York, Maine.

You may have noticed references in these notes in the past few months to the fact that I wrote to classmates requesting news for the notes. In all, I sent out 210 post cards. The response was only fair — about 20 replies. This 10 per cent return has led to a domestic chiding, for my wife's 1947 Smith College class recently responded with a 90 per cent return to post card requests for news for their class notes. Come, come, gentlemen, is the male animal so modest?

Last and final notice about the 10th Reunion: We expect over 150 persons to be there. If you were not on the mailing list, contact Chairman Jim Hoey, Jr., at 1826 Centre Street, West Roxbury 32, Mass. See you at the Reunion. — RICHARD M. FEINGOLD, *Acting Secretary*, 49 Pearl Street, Hartford 3, Conn.

• 1947 •

One of these days I'm just going to sit in my corner and sulk! Either that, or fill this column with a lot of senseless gibberish — perhaps even Swahili, I'm rather good at that: *Simba* (tr. — lion) — just to see if I can evoke any sort of reaction from you my loyal readers (notice the plural — I'm an optimist), and get someone to write me a letter. Just when my secretarial life was at its lowest ebb — the nadir (good crossword puzzle word), one might say — I received of all things, a little note. With soaring spirits I ripped open the envelope, and then the crusher came. It was from someone who was *not* a member of this Class! Fie, oh fie, you members of 1947 — to let a man from another class assume your responsibilities, and go to the trouble of sending me information about one of you. — CLAUDE W. BRENNER, *General Secretary*, 1470 Beacon Street, Brookline 46, Mass.

See note at end of this page — Ed.

• 1948 •

As of our deadline for these notes (April 20), the prospects for a big turnout

at the Reunion appear excellent. Already more than 50 men have said that they are making definite plans to come and more returns are coming in every day. If you haven't made your reservation yet, it isn't too late. Just send the five dollar registration fee to Bob Mott, at Paul Revere, North, Phillips Academy, Andover, Mass., and then come and join the crowd at the Mayflower Hotel, Manomet, Mass., on Saturday, June 13.

In case you're wondering who is planning to come to the Reunion, we'll list the following names of men who are definitely or probably coming. If your best friend isn't on the list, write him a note and make some plans to attend with him. Harold Ottobriani, Dan Lanciani, R. A. Ormiston, John Mitchell, Robert Lovezola, Manuel Kramer, Leo Martin, A. A. Yurgelun, Jim Theodosopoulos, S. J. Tilden, Frank McGowan, Charles Deane, Edward Capen, E. Garforth, Chester Vappi, Frank Viera, Al Baum, George Brown, Nicholas De Wolf, Roy Evans, Adolf Monosson, Arthur Renz, Robert Bliss, Philip Bragar, Albert Carr, Bob Mott, Arthur Brusila, Warren King, R. E. Annis, Stan Jensen, Bob Wolfsey, A. W. Van Abs, Joe Yance, Russ Stevens, Stue Thayer, Ron Kallman, Dick Harris, Hank Gilbert, Stephen Wilder, Harry Jones, Louis Kreek, Tom Lacy, Vic Dawson, Ployer Hill, Don Floyd, Stephen Miller, Arthur Waxman, Emerson Callahan, Dave Cist, Jerry Krinsky, Bill Zimmerman, Ben Brettler, Ken Brock, Norb Andreas, Jim Adelstein, and Jack Winninghoff.

Hurry up and add your name to the list. — WILLIAM R. ZIMMERMAN, *Secretary*, 1604 Belmar Road, East Cleveland 18, Ohio. *Assistant Secretary*, RICHARD H. HARRIS, 26 South Street, Grafton, Mass.

See note at end of this page — Ed.

• 1950 •

Thanks to those of you who have taken the time out from your usual routines to write of your doings. In this category falls Jim Staikos who writes from Everett, Mass., about his work at Monsanto making chemicals minus sliderule, but with "lots of headscratching." What for those years at Tech, Jim? Also a more recent note from Dick Ahern with more details of his adventures in Europe, which indeed sound much more fascinating than my quick three-week jaunt last winter.

Bob Mann, now working for M.I.T. at the D.A.C.L. wing of the Institute, seems to be enjoying his extended stay at the Charles. From his letter, I gather that '50 was well represented at the Midwinter Meeting, including several members of the distaff side. Among those present, Bob writes of seeing Gerry Fritch, now working in Winchester with the Caldyne Company. (With Gerry at Caldyne is Scott Knowles, Course X turned E.E.) Charlie Chase was also at the meeting, having recently returned from Cambridge University, England, where he spent last year doing low temperature research on a Fullbright. Dick Granke and Bill Krag are reported working at the Institute, Dick at the High Voltage Laboratory, and Bill at Project Lincoln. Also on the Institute payrolls are Pete Palmer and Ken Fertig working in the Instrumentation Labora-

tory. Frank Ruccia and Paul Egan are also among those who have found the byways of Boston pleasant; both of them toiling at Monsanto. Also among the Class present at the meeting were Frank Paris and Bill Glass.

Guess this will be the last column with my signature under it, as Jack Weaver is expected back from Europe soon — ready and eager to take back his job as Secretary. And so, yours truly turns in his old typewriter. It's been fun keeping up with all of you this year and hope to continue hearing from all of you. See you at Tech this June. — MYLES S. SPECTOR, *Acting Secretary*, 3114 Sunny Crest, Dayton 9, Ohio.

See note at end of this page — Ed.

• 1952 •

Happy anniversary to you all. It's now one year since our four or five year stretches at the Institute have expired. I sure hope you all are happy in your new circumstances, although I know it may be a little difficult for some members of the Class who are now in Korea. Let's not forget M.I.T. in the whirl of our new living; it's what put us where we are today. We all have new responsibilities as Alumni. The financial plight of the private colleges and universities in the country has recently been graphically outlined in a national survey. To put it bluntly the colleges are sorely in need of funds. You are M.I.T.'s reservoir for the future. Your help is needed badly.

From the *Triangle of Phi Mu Delta* comes the following note: "Lt. James R. Strawn has completed his training and teaching in the States and is leaving for Korea in January."

I recently saw the following in Boston: "Barnyard" Gardineer now struggling for his S.M. at M.I.T., and Bob Briber in the same category worrying about his thesis. Bob will be entering the Army in June. Gus Rath was in from Wright-Patterson Field, Dayton, Ohio. Gus is doing work in psychological research on how men's attitudes are affected by their surroundings in aircraft. Gus and Phil Schirm are rooming together. Phil is working in procurement. Bob Schwanhauser, stationed out at Albuquerque, N.M., drops in to see them every so often with a fifth or so and recent news of an impending engagement. Swanny is in research and development work. I'm sure you'll all be glad to know that Dean Fassett, who had recently been seriously ill, is now up and around.

Hitchings. Janet Ballou, of North Quincy, Mass., and Lieutenant Phil Crimmins were married in North Quincy on February 14. Phil is with the Army Security Agency at Fort Devens, Mass. Pat Taylor and Lieutenant Bill Lane were married April 11 in Upper Montclair, N.J.

That's all the dope for the month. Signing off until July. — STANLEY I. BUCHIN, *Secretary*, 150 Tryon Avenue, Englewood, N.J.

Additional copy received from the Classes of 1941, 1947, 1948, 1950, and 1952 could not be published in this issue of The Review because of last-minute emergency in production. We regret this situation very much but hasten to assure our readers that the copy withheld will appear in the July issue. — Ed.

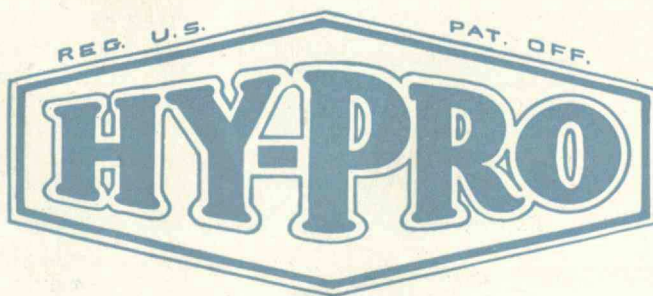
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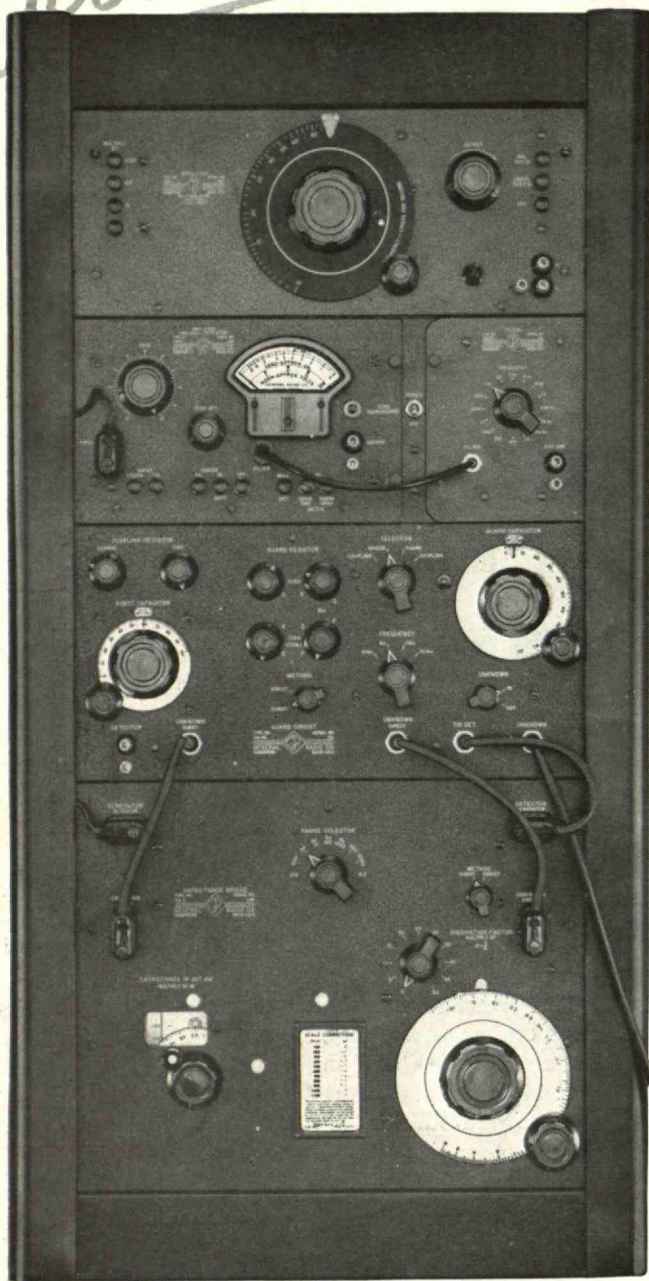
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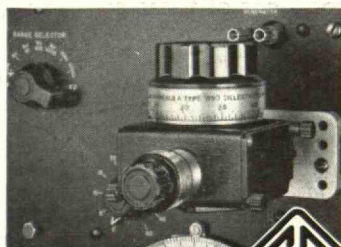
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